SOUTHERN POWER AND INDUSTRY

FEBRUARY, 1956

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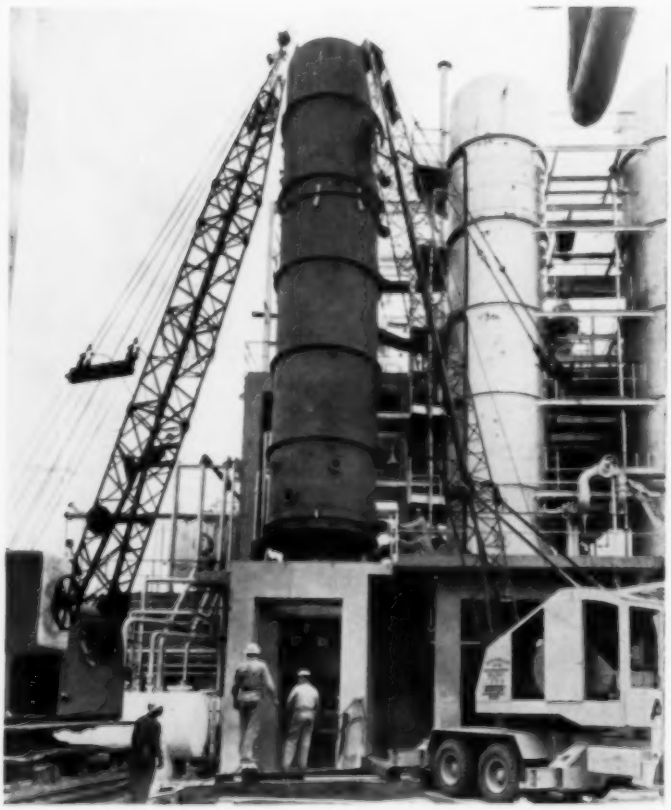
More Synthetic Rubber Capacity

Lake Charles, Louisiana Plant



THE LAKE CHARLES, LOUISIANA INSTALLATION pictured above soon will be producing synthetic rubber at the rate of 150,000 tons annually. Output will be 50 per cent greater than when the plant was purchased by The Firestone Tire & Rubber Company from the Government last April.

There's MORE rating selection available in Allis-Chalmers MOTORS

To meet power plant needs . . .

Allis-Chalmers Offers Complete Line of Rib-Type MOTORS from 1 to 100 Hp

Allis-Chalmers, a pioneer in rib-type TEFC motor design, is the only leading manufacturer offering a complete line of these motors from 1 to 100 hp. The many cost-saving features of deep-rib construction can be applied in a variety of uses . . . both indoors and out.

Here's why these motors can cut power costs:

MORE cooling surface — Rib-type design provides reserve cooling capacity in dirty locations.

MORE iron—Cast-iron frame and external parts assure rigidity and resistance to corrosion.

MORE copper — Allis-Chalmers greater use of copper increases electrical life.

MORE lubrication provisions — Large grease reservoirs surround bearings. Provision made for in-service relubrication — important where moisture or corrosive vapors contaminate grease.

As a new machinery component or as replacement, specify Allis-Chalmers. To find out more, contact your nearby Allis-Chalmers distributor, district office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

A-4948

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

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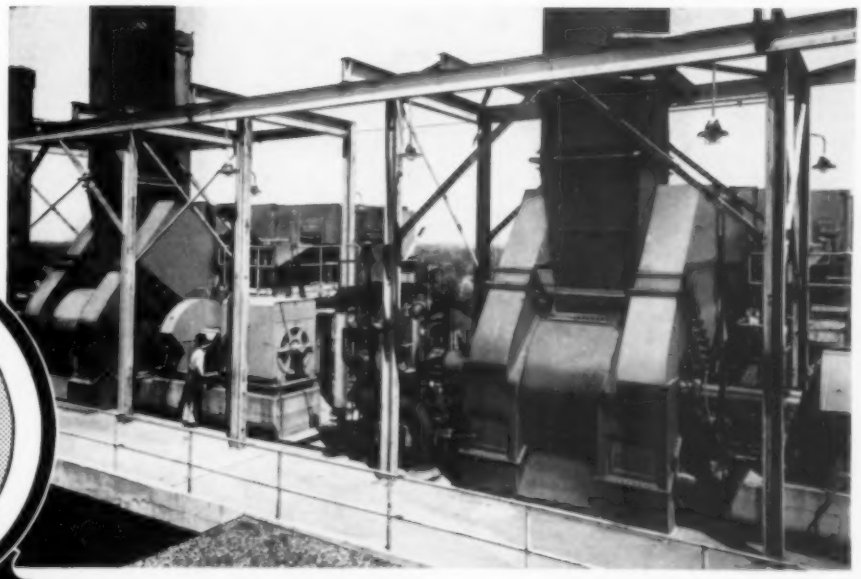

MARATHON

chooses marathon performers in the mechanical draft field

Clarage Fans Installed at Ohio Oil's Refinery, Robinson, Ill.

"Best in the long run" is Marathon's slogan for its gasoline. But there's growing opinion that these five words aptly describe Clarage equipment as well.

For example, Ohio Oil's $3,500,000 improvement and expansion program for their power plant required the removal of Clarage induced draft fans which had been on the job continuously since 1926. Think of it, nearly 30 years of service under the most punishing conditions a fan can encounter. Value received — in full!

Small wonder that two Clarage Type RT induced draft fans and two Clarage Type W forced draft fans were selected to serve the two 180,000 lbs. per hour Riley boilers in the modernized plant.

These fans are installed outdoors on an elevated platform, and are equipped with dual drives arranged for automatic control on both the turbine drive and the motor drive. The turbine is kept hot at all times so that it will start operating automatically in the event of failure of the motor, magnetic coupling, or electrical system.

If, like The Ohio Oil Company, you want marathon performers in the mechanical draft field, by all means investigate the equipment we offer. CLARAGE FAN COMPANY, Kalamazoo, Michigan.

CLARAGE ... *dependable equipment for making air your servant*

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

DUKE POWER Company turbines at Riverbend Steam Station, Mt. Holly, North Carolina. All seven turbines in this plant, with a capacity of 631,000 kw., are lubricated with *Texaco Regal Oil R&O*. In addition, four turbines, totaling 210,000 kw. capacity, at Duke's Cliffside Steam Station, Cliffside, North Carolina, and six turbines, totaling 440,000 kw. capacity, at Buck Steam Station, Spencer, North Carolina, are also 100% Texaco-lubricated.

NO SLUDGE, NO RUST, NO FOAM IN DUKE TURBINES...

THE REASON WHY: Seventeen of Duke Fower Company's steam turbines — having a total capacity of more than 1,281,000 kw. — are lubricated exclusively with world-famous *Texaco Regal Oil* — the oil that, throughout its extra long service life, affords extra protection against sludge, rust and foam, assures clean turbine systems, normal bearing temperatures, instantaneous governor response.

Texaco Regal Oil R&O is made from carefully selected choice base stocks. These are specially refined, then further improved by effective additives and special processing.

There is a complete line of *Texaco Regal Oils R&O* to meet the stringent requirements of all leading turbine builders, for all types and sizes of turbines.

Let a Texaco Lubrication Engineer help you achieve greater power plant efficiency. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Regal Oils R&O

FOR ALL TURBINES

TUNE IN: TEXACO STAR THEATER starring JIMMY DURANTE on TV Sat. nights. METROPOLITAN OPERA radio broadcasts Sat. afternoons.

SOUTHERN POWER AND INDUSTRY

Vol. 74
No. 2

FEBRUARY, 1956

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Facts and Trends

FOR SOUTHERN INDUSTRIAL AND POWER EXECUTIVES

February 1, 1956

◆ "PUSHBUTTON" ABSORPTION MACHINES by Carrier, for use in air conditioning and process cooling systems, produce chilled water from steam. Large capacity units—from 100 to 700 tons—have no major moving parts, employ plain water as the refrigerant, and can be controlled by a time clock, thermostat or pushbutton.

Overloading will not hurt the machines. Minimum number of moving parts and light weight of the equipment permit installation on upper-floor locations in buildings or high on the steelwork of an industrial plant close to the process where cooling is required. Design eliminates many of the major service lines and all of the external auxiliary piping normally assembled at the job site, thus reducing time and cost of installation.

◆ IRON POWDER MAINTENANCE ELECTRODE by Lincoln Electric is for fast build-up of worn parts at low cost. Its high deposition rate results in a 35% to 45% increase in the amount of metal deposited per minute, compared with conventional build-up electrodes. This is an important cost-reducing factor in build-up applications (shafts, rolls, trunnions, shovel tracks, etc.) where large amounts of metal are deposited.

◆ HOT THREAD MEDICINE—Research engineers at General Electric's Thomson Laboratory prescribe milk of magnesia as the best tonic for keeping furnace nuts and bolts turnable. They found that this simple household remedy prevents nut and bolt threads from melting together and locking even after three weeks of heat high enough to melt a brass door knob.

◆ AVERAGE FUEL CONVERSION EFFICIENCY of the steam-electric plants has been greatly increased in recent years. In 1945, 1.30 pounds of coal were required, on the average, to produce a kilowatt-hour of electricity. In 1955, the figure was only 0.95 of a pound—a reduction of 27%. The newer plants do even better than that. A generating plant now under construction is expected to use only 3/5 of a pound of coal per kwh of generation.

Similar advances are noted in transmission developments. Lines operating at 330,000 volts are now in use. A double circuit line of this type is estimated to have a capacity of more than eight times as great as that of a double circuit 132,000 volt line, which is a type now widely used.

◆ GASKETING AT 300 F—Ordinary vegetable fiber gasketing permits use of gasketing at about 212 F. Garlock 662 (a cork base paper impregnated with Chemigum Latex) is claimed to permit use of gasketing at temperatures as high as 300 F. Primary application is in the oil and chemical processing industries.

◆ GRATING AS SUN SHADE—An increasing demand for aluminum grating as sun shades for modern buildings is reported by Borden Metal Products, one of the country's largest grating manufacturers. Use of glass walls, windows sills, etc., in modern architecture requires a type of protection from the glare of sunshine that shields, yet does not shut off light.

(Continued on page 6)

BULLETIN 600 MANUAL STARTER

for Motors of 1 Hp or less

With linkage operating lever & pilot light.

With standard operating lever & pilot light.

3-Way selector and pilot light.

Key operated switch with removable key.

NEMA Type 7 enclosure for hazardous dust or gases.

NEMA Type 4 enclosure for watertight & weatherproof service.

This compact toggle switch with a built-in overload breaker satisfies the National Electrical Code (Para. 4322 sub. C) covering overload protection requirements for motors of 1 hp or less.

QUICK MAKE & BREAK CONTACTS—The simple, rugged, over-center mechanism has a quick make and break action. No "teasing" of contacts means long contact life.

GENEROUS WIRING SPACE—Cover slips off, exposing front and both sides.

ATTRACTIVE APPEARANCE—The clean, modern lines are a sales asset to any machine. Enclosures listed for every service.

Allen-Bradley Co.
1328 S. Second St., Milwaukee 4, Wis.
In Canada—
Allen-Bradley Canada Ltd., Galt, Ont.

Flush mounting of two Bulletin 600 starters, each with its own pilot light.

In a standard conduit switch box.

In a surface mounted conduit box.

NEMA Type 4 enclosure with pilot light for use in wet or damp locations.

ALLEN-BRADLEY SOLENOID MOTOR CONTROL

CONSULT YOUR LOCAL ALLEN-BRADLEY REPRESENTATIVE

ALBUQUERQUE—A & A Supply Co., 114 Morningside Dr., N. E., Tel: 5-5506
ATLANTA—W. R. Calverley, 1000 Peachtree St., N. E., P. O. Box 7086, Sta. C., Tel: Elgin 8833
BALTIMORE—H. M. Wood & Co., 124 Light St., Tel: MUlberry 5-4643-4
BIRMINGHAM—J. L. Howarth Co., Inc., 3021 Seventh Ave., So., Tel: 53-1171
CHARLESTON—Henry E. Payne, 310 Union Bldg., Tel: 3-1393
CHARLOTTE—Le Roy P. Spoon, 307 Lincoln St., Tel: EDison 4-6334
DALLAS—J. K. Webb, 2810 McKinney Ave., Tel: Tenison 6179
HOUSTON—Wilson Electrical Equip. Co., 2930 Commerce Ave., Tel: Capitol 8-1557
JACKSONVILLE—Robert P. Smith & Co., 2031 Hendricks Ave., Tel: 9-9474
KANSAS CITY—B. L. McCreary & Son, 1819 Central St., Tel: Harrison 1668
KNOXVILLE—Bowditch & Co., 1311-C N. Broadway, P. O. Box 3145, Tel: 4-2513
LITTLE ROCK—Curtis H. Stout, Inc., P. O. Box 107, 400 Shall St., FRanklin 4-8201
LOUISVILLE—Rietze & Co., 2209 S. Floyd St., Tel: MElrose 7-3603
MEMPHIS—Curtis H. Stout of Tennessee, Inc., 718 M & M Bldg., Tel: JAckson 6-7601
MIAMI—Lee-Smith Co., 121 S.E. First St., Tel: 82-6766
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ST. LOUIS—Harold Julien, 904 N. Grand Blvd., Tel: JEfferson 5-1901
SAN ANTONIO—Wilson Elect. Equip. Co., 101 E. Maple St., CApital 4-2344
SAN DIEGO—James A. Setchell Co., Inc., 301 W. "G" St., Tel: BEImont 3-3981
TULSA—John W. Elder Co., 1526 East Fourth St., Tel: Diamond 3-9149

Facts and trends *(continued from page 4)*

Lightweight aluminum grating allows 80% passage of light and air while it cuts off the penetrating rays of the sun. In some applications, the aluminum grating shades are doubly useful—they serve as a permanent working platform for easy access to windows above.

◆ ADHESIVE CHECK-OFF LABELS for oil circuit breaker maintenance are now available free of charge to utilities from Allis-Chalmers Manufacturing Co. Similar to the adhesive record forms filling station operators affix to the motorist's car door, the circuit breaker forms provide a check-off list for all standard tests, operation counter readings, etc., for control, operator and breaker.

Available for either pneumatic or "Pneu-Draulic" operators, the labels come in convenient pads of 10. Each breaker shipped has an initial supply, but reorder cards on the pads will permit new orders to be obtained from the company.

◆ LIQUID METALS are replacing water, the conventional heat transfer medium in some atomic power plants. Sodium and an alloy, sodium-potassium, are among the liquid metals chosen for heat transfer, according to recent report of G-E engineers. These metals will flow through a heat transfer system at temperatures up to and above 1300 F as water flows through many conventional heating systems.

Principal advantage of sodium is its high boiling point, which means that no pressure is required in the system to hold the transfer medium at extremely high temperatures. At the same time, sodium liquefies at a temperature just under the boiling point of water, so that if it solidifies in the system, it is relatively easy to liquefy again. Sodium permits high rates of heat transfer and its low viscosity makes pumping power requirements reasonable.

Corrosion resistance and high thermal stresses are major design problems. The difficult choice is between corrosion-resistant materials that have low heat conductivity and high expansion, and the less corrosion-resistant materials that have better thermal conductivity and lower expansion. Since the system would work at low pressures, the major design problem is providing resistance to fatigue stresses in the system.

◆ PEOPLE MAKE MARKETS—Our birth rate has risen 50% since the 1930's, changing the economic picture of the entire country. In the 20 years between 1920 and 1940 the number of children under 14 actually decreased by 640,000. But in the 15 years from 1940 to 1955, the number increased by almost 15,500,000.

Johns-Manville Corporation's Vice President, Harold Berlin, recently emphasized that "this spectacular increase in population growth is having a more dynamic effect on our economy than any other single factor. Its result is that everything in this country is, or will become, too small."

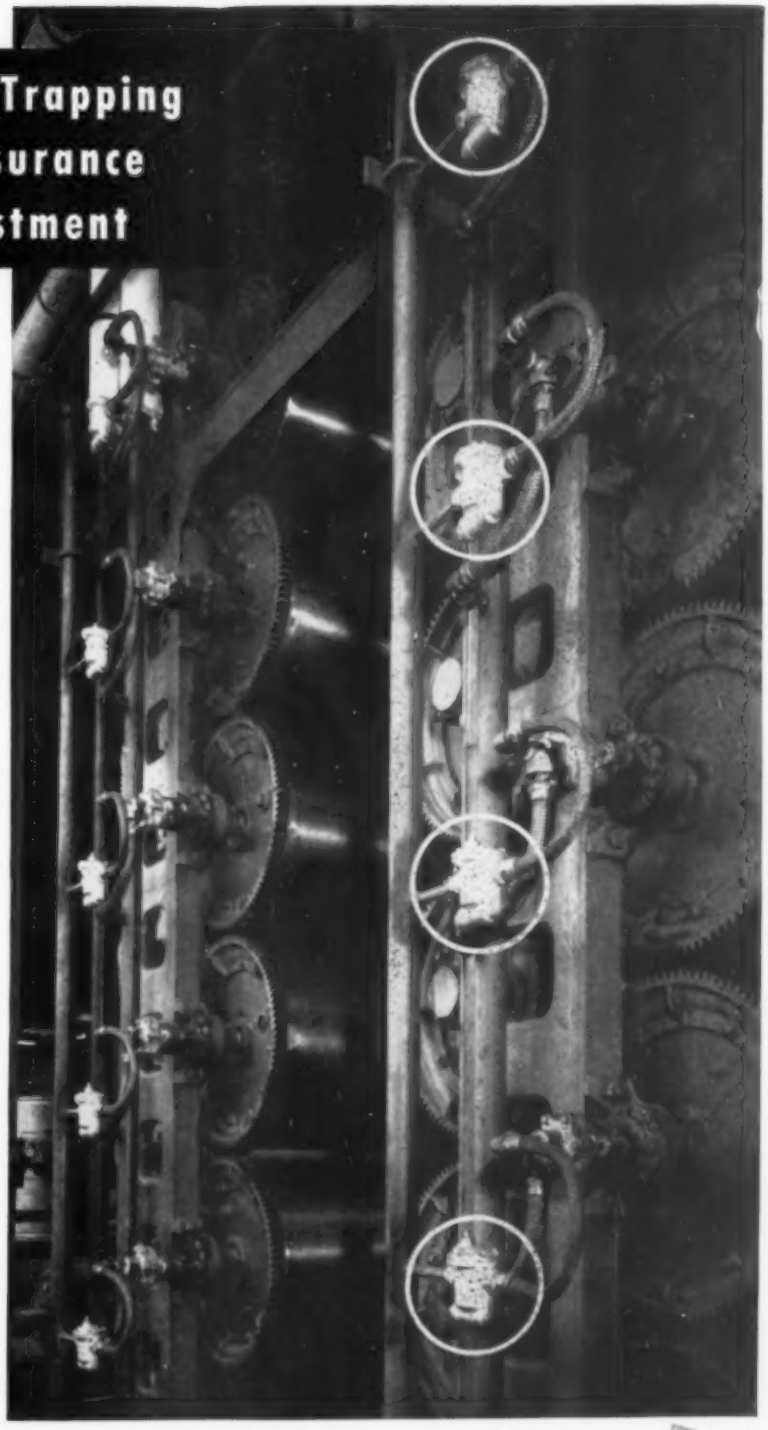
◆ PRIVACY ENJOYED BY TERMITES in out-of-the-way places may be a thing of the past. A newly developed termite sound detector was demonstrated in Atlanta recently at an Orkin Exterminating Co. service conference.

Seems that when an inspector is checking a structure for infestation and taps on floors and sills with his screwdriver, termites begin a quick rapping sound with their heads—against each other and against wood—to warn others in the colony that danger is near.

New inspection unit employs a selector system in which a wide range of sounds are detected. Selector eliminates almost all other sounds while leaving the termite warning signals audible.

Write the editors for additional information on any of the above items. SOUTHERN POWER & INDUSTRY. 806 Peachtree St., N.E. Atlanta 5, Ga.

Armstrong Unit Trapping —Low Cost Insurance of a Big Investment



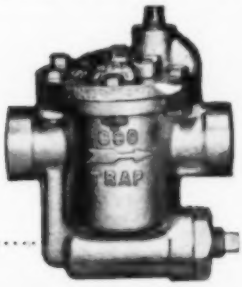
• *30% more production from kettles . . . 84 degrees higher dryer temperatures . . . 8% more output from dry kiln*—these are typical results of unit trapping with Armstrongs.

What about your plant? It doesn't make good business sense to spend $500, $5,000 or $50,000 for equipment and then lose 10% to 30% or more of its productivity for lack of proper trapping.

Armstrong traps are "application engineered" by men who know trapping thoroughly—how to size traps for fast heat-up and top temperatures . . . correct installation practice . . . steam supply and return line requirements . . . variable pressure problems . . . mysterious difficulties. The cost of retrapping with Armstrongs is usually but a fraction of 1% of the cost of the equipment drained—*low cost insurance of a big investment!*

Call your Armstrong Representative today. He sells on a basis of "satisfaction or your money back." Or, write:

ARMSTRONG MACHINE WORKS
806 Maple St., Three Rivers, Mich.



Armstrong built-in strainer traps, pictured on textile dry cans at the right, cost less to buy and install than standard traps and separate strainers — they reduce maintenance and costly shutdowns. Three sizes, ½" or ¾" connections.

SEND FOR FREE STEAM TRAP BOOK . . .

. . . 44 pages of how-to-do-it data. Useful and educational. Free on request without obligation.

S45

ARMSTRONG STEAM TRAPS

NEWS *for the South and Southwest*

J. G. Holtzclaw, President of Vepco, Dies Unexpectedly

Jack Gilbert Holtzclaw, president of the **Virginia Electric and Power Company** for the past 26 years, died unexpectedly December 13 of a heart attack in a Richmond, Virginia, hospital.

Under his leadership Vepco has played a major part in the rural electrification and the overall electric service of Virginia, the Eastern edge of Western Virginia and northeastern North Carolina, and in the vast expansion of the company's generating facilities and transmission and distribution systems, totaling $346 million in the past eight years.

These included multimillion dollar steam generating facilities at Chesterfield, Bremo Bluff, Portsmouth, Norfolk and Possum Point, and a $34 million dam and hydroelectric station due for completion at Roanoke Rapids, N. C., this month.

The utility executive was born in Perry, Ga., on November 22, 1886. He attended the public schools of Perry and, later, the Georgia Institute of Technology, where he received the bachelor's degree in electrical engineering in 1907.

He joined the engineering firm of Stone & Webster at Boston as a student engineer shortly after graduation. He transferred in the same capacity the following year to the Savannah Electric Company and worked in various departments of that company until January, 1911. He then moved to the Pensacola Electric Company at Pensacola, Fla., where he became assistant superintendent of transportation and later superintendent in charge of both streetcar and electric and power operations of the Pensacola Company in 1916.

Mr. Holtzclaw moved up to the managership of that company three years later and was transferred to Gulf States Utilities Company at Beaumont, Texas, in 1924 as vice president. He remained there until 1929 when he was elected president of Vepco.

(*More News on P.* 12)

Webb Company of Georgia New Atlanta Plant

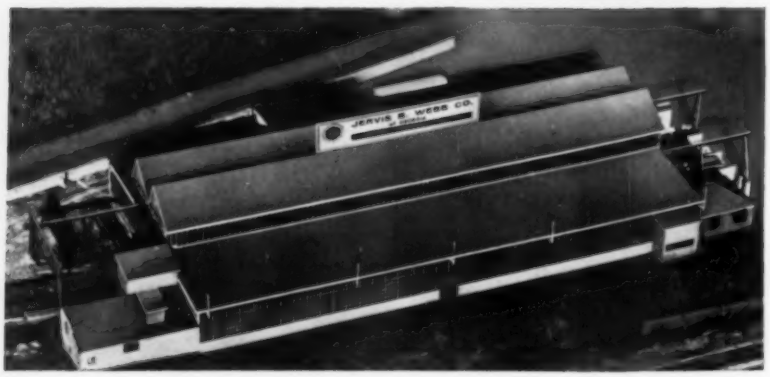
The Jervis B. Webb Company, Detroit, Michigan, has opened a new manufacturing plant in Atlanta, Georgia. The new plant, **Jervis B. Webb Company of Georgia,** will design, manufacture and install all types of conveyor systems for industry. The plant will also design and manufacture many new types of conveyor systems to fill the specific requirements of southern industry.

The plant in Atlanta has 22,400 square feet of manufacturing space and employs 100 persons at the present time. The addition of this plant brings to four the total number of Webb plants in the United States and Canada. Other plants are located at Hamilton, Ontario; Los Angeles, California; and Detroit, Michigan, where the main office is located.

The Webb Atlanta plant will be a complete operating unit in itself — housing complete manufacturing, engineering and sales departments. The plant is under the management of **Howard L. Meyer,** Secretary and General Manager. Other key personnel at the Atlanta plant include **John Thompson,** Chief Engineer, and **Ted Schlinkert,** Chief Estimator.

Howard L. Meyer

The New Webb Plant



FUTURE EVENTS of Engineering Interest

EDISON ELECTRIC INSTITUTE, 420 Lexington Ave., New York 17, N. Y.
Feb. 6-10, National Industrial Electric Heating Conference, Netherland Plaza Hotel, Cincinnati, Ohio.

SOUTHERN SAFETY CONFERENCE, INC., W. L. Groth, Executive Director, Box 8927, Richmond 25, Virginia.
March 4-6, 17th Southern Safety Conference and Exposition, Biltmore Hotel, Atlanta, Georgia.

ELECTRICAL CONFERENCE as applied to pulp and paper industry being sponsored by Jacksonville, Florida, section A.I.E.E. and College of Engineering of University of Florida.
March 8-9, Conference on Electrical Engineering, University of Florida, Gainesville, Florida.

OKLAHOMA UTILITIES ASSOCIATION, Kate A. Niblack, Secretary, Suite 2415, Oklahoma Biltmore Hotel, Oklahoma City 2, Okla.
March 22-23, Annual Convention, Oklahoma City, Oklahoma.

A.S.M.E., C. E. Davies, Secretary, 29 West Thirty-Ninth St., New York 18, N. Y.
April 1-5, Oil and Gas Power Division Conference, Jung Hotel, New Orleans, La.
Sept. 23-26, Petroleum-Mechanical Engineering Conference, Conrad Hilton Hotel, Dallas, Texas.

It's NEW! It's Revolutionary!

Ever see a steam trap

SO SMALL

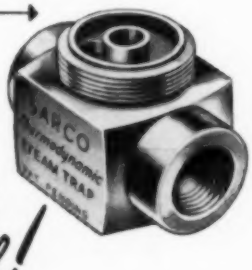
SO SIMPLE

SO TROUBLE-FREE!

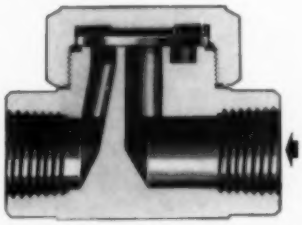
1. A CAP

2. A DISC

3. A BODY



That's all!



YES, SO TROUBLE-FREE: No valve-closing mechanism to wear or stick – the kinetic energy of steam closes valve. No critical clearances to choke. No gaskets to leak.

Practically Eliminates Maintenance!

Here's the *smallest*...the most *compact*...the most *durable* steam trap you've ever seen...for all-around trapping effectiveness! It's the new Sarco Thermodynamic trap.

Look at it. So small...it fits into the hollow of your hand. So simple...only 3 rugged parts...machined from stainless steel bar stock. So trouble-proof...only moving part, a hardened solid stainless steel disc, practically immune to wear. Not affected by superheat, water-hammer, corrosive condensate.

Use the SAME trap for 10-600 psi...for light or heavy loads ...without seat or valve change or other adjustments. Closes tight on no load—no steam waste.

Ask for a 60 day trial installation of Sarco TD trap and strainer...write for bulletin 257. Sarco Company, Inc., Empire State Bldg., New York 1, N. Y.

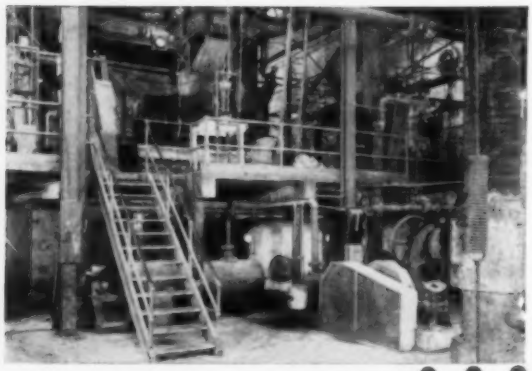
8140-B

SARCO

Only Sarco Makes All 5 Types

That's why Sarco can give impartial advice on proper steam trap selection.

Flintkote Company *Modernized* a Power Plant



when Flintkote Company modernized its power plant at its Ridgefield Park, N. J. building-paper mill it went all out

and now gets

20% more steam
21% more efficiency
33% savings in fuel cost
33% less maintenance costs

. . . proving that it pays to modernize

CONGRATULATIONS

to The Flintkote Company for its citation received in POWER'S 1955 Modernization Program

Five out of twelve citation winners for their modernization of steam-power facilities feature Riley Steam Generating Units and Riley Fuel Burning Equipment

Power
MODERNIZATION PROGRAM

the others are:

Bendix Products Division, Bendix Aviation Corp., South Bend, Ind.

Carbide & Carbon Co., Blaine Island, So. Charleston, W. Va.

The Garlock Packing Co., Palmyra, N. Y.

The Pennsylvania Railroad, Juniata Shops, Altoona, Pa.

FLINTKOTE'S PROBLEMS:

- Increase steam capacity to provide 20% margin for future requirements.
- Increase steam generating efficiency.
- Utilize two lower cost fuels, bituminous coal and #6 oil, in place of anthracite.
- Provide for possible future shortage of one of these fuels.
- Reduce average $20,000 annual maintenance cost.
- Complete modernization without interrupting production
- Utilize existing plant building.

RX:

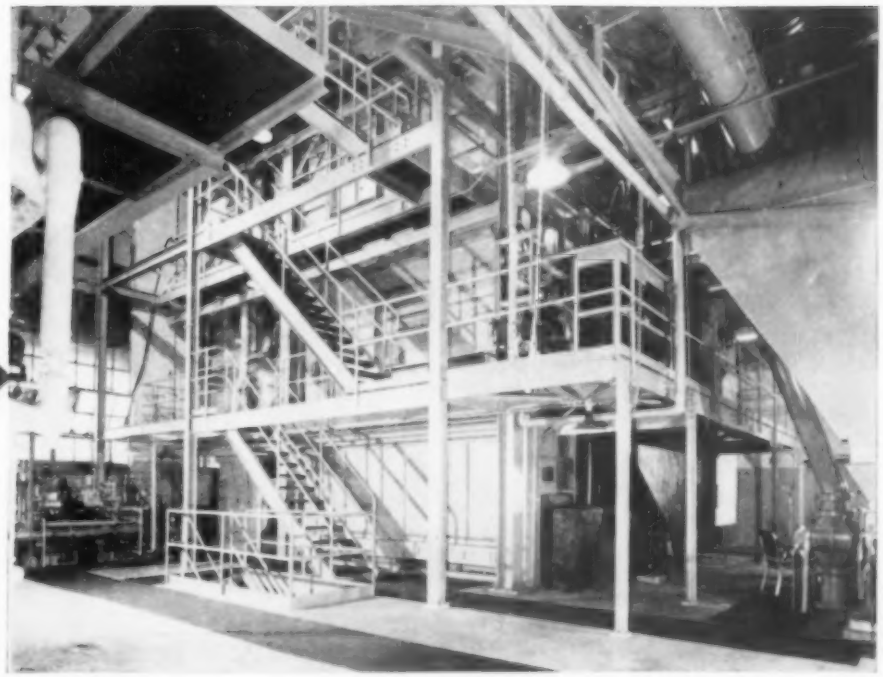
- Replace two older stoker fired units burning anthracite with a Riley Unit fired by Riley Flare Type Burners and Riley Pulverizers.
- Overhaul and convert one of the three old units to oil firing as standby unit.
- Provide automatic combustion controls and up-to-date coal handling and ash removal systems.

RESULTS:

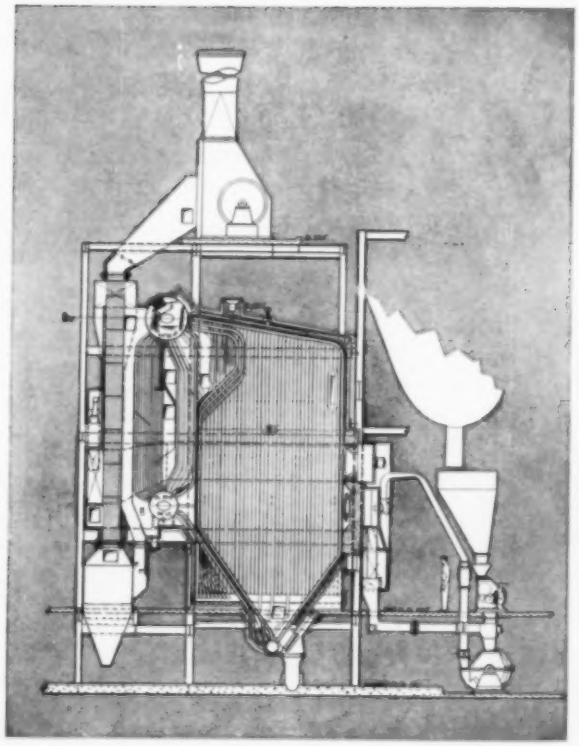
- Work was accomplished without interruption to paper mill production; tie-ins were made during normal plant shutdown.
- Operators were thoroughly trained to fire new fuels and equipment.
- Efficiency increased from 71% to over 86%.
- Fuel costs were lowered from 67.5c per 1000 lbs. of steam to 46c per 1000 lbs. of steam with a total annual savings in fuel costs of $55,000 plus a substantially reduced maintenance cost.

RILEY designs, engineers, manufactures and erects complete steam generating units for Public Utility Central Stations and Industrial Power and Heating Plants

and now saves $55,000 on fuel costs alone



with RILEY Steam Generating and Fuel Burning Equipment



Engineering Data of Equipment furnished to Flintkote Co. by RILEY

One 60,000 lbs/hr RX Steam Generating Unit complete with Riley Air Heater, Superheater and featuring patented Riley Single Header Hopper Bottom; Two Riley Flare Type Burners

*One Riley 50 Pulverizer
Guaranteed Efficiency at 60,000 lbs/hr — 85.3%
Actual Operating Efficiency exceeding 86%.

*It will pay you to investigate the savings that can be affected when you install Riley Pulverizers to fire boilers of 50,000 to 75,000 lbs/hr capacity.

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INTERNATIONAL INDUSTRY EXPOSITION
Atlanta, Georgia, May 18-25

Plans are being completed for the South's first full-scale international trade show, the Southeastern International Industrial Exposition, to be held in Atlanta's Lakewood Park next May 18-25. An advisory committee consisting of well-known leaders who have spearheaded the growth of this section of the nation is now putting finishing touches on the huge show aimed at further stimulating the progress of the region.

Chairman of the exhibition's board is E. A. Yates, Jr., manager of the Industrial Development Division of the Georgia Power Co. Directors include: Scott Candler, secretary, Georgia Department of Commerce; Robert M. Holder, prominent commercial real estate developer; Harold L. Perkins, vice president of the Central of Georgia Railroad, and Clifford M. Clarke, executive vice president, Associated Industries of Georgia.

Invitation to exhibit in the Southeastern International Industrial Exposition are now going forward to manufacturers and distributors in all parts of the United States and several foreign countries.

The Exhibits will occupy two large buildings and a spacious outdoor plaza area. The structures will be known as the Commerce Building and the Industry Building. The former will house displays of finished products and services while the latter will feature raw materials, machinery and equipment. The plaza will provide space for heavier exhibits such as transportation, road building and construction equipment.

Highlighting the plaza will be the Theme Center of the exposition — an area of 5,000 square feet wherein spectacular lighting effects and decorations will pay colorful tribute to the industrial and commercial growth of the great Southeast.

Each of the two exhibit buildings will feature a 350-foot red-carpeted main aisle, which will be devoted to those firms presenting especially designed booths.

Attractive and novel lighting and decor will feature both buildings. For the convenience of exhibitors and the thousands of buyers who will attend, the exhibition management will provide telephone, telegraph and banking facilities, a U. S. branch post office, hotel and transportation reservation services and ample parking and storage space.

Admission will be by invitation only. The general public will not be admitted. Exhibitors will issue the invitations, and an official program will be distributed without charge.

The opening on the evening of May 18 will be a gala occasion for which formal invitations will be extended to national, state and city officials, as well as to ranking members of the armed services, representatives of foreign governments and leading citizens of the Southeast. Special ceremonies will be staged for this event.

Programs of panel discussion covering subjects of importance and interest to manufacturers and distributors will be held, and a well-rounded calendar of social events, including a banquet on the closing night, is being arranged. Special attention is being given to a program for the ladies who will be in attendance during the eight day show.

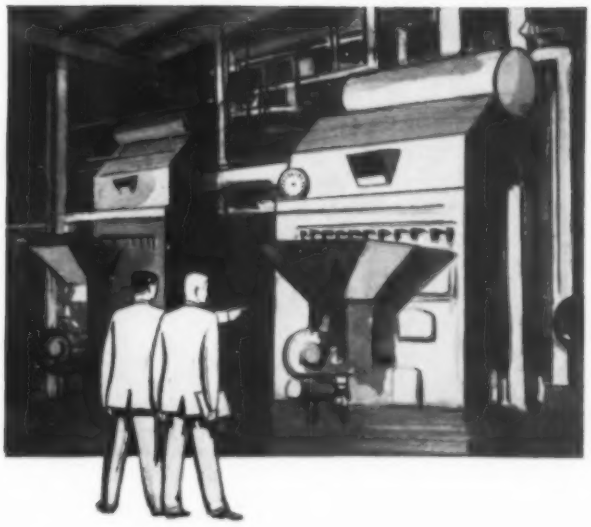
Atlanta was chosen as the locale for the first Southeastern International Industrial Exposition, only after a comprehensive survey proved that it was generally conceded to be the industrial, commercial, financial, transportation and distribution center of a rich regional market. A market of over 22 million persons. And, an area whose phenomenal industrial development — 857 new industries since World War II, bringing the total to 1,675 — and population growth—21.1% in five years — are attracting world-wide attention and interest. Transportation statistics show that Atlanta is the largest railroad center in the Southeast and is numbered among the ten busiest air terminals in the nation.

The timeliness of the exposition together with the enthusiastic reception accorded its initial announcement by industrial and commercial leaders representing national concerns in Atlanta, has justified the choice of locale. All of these factors combined with a most important and necessary element, namely management's long experience in the production and management of international and national trade and cultural expositions, indicates the success of the Southeastern International Industrial Exposition . . . "Market Place of the Great Southeast" for 1956.

TRADE SHOW PLANNERS—Conferring on arrangements for the Southeastern International Industrial Exposition, which will be held at Atlanta's Lakewood Park next May 18-25 are, seated, E. A. Yates, Jr., chairman, and standing left to right, Scott Candler and Robert M. Holder, directors, and Roger E. Montgomery, Managing director.

More News—Page 100

competent coal counsel



whether for heat, power or special purpose

Competent coal counseling service is available to you, without obligation. The men who staff the N&W coal bureaus have had years of experience with the utilization of coal, and they are well qualified to discuss your problems with you. They will be glad to tell you all about high-quality Fuel Satisfaction* and how it can meet your specific requirements more efficiently and economically. Feel free to contact the bureau nearest you for dependable advice on the selection, transportation and utilization of the *right* coal for your purpose.

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Commerce Building
Telephone LIberty 2-2229
Boston 10, Massachusetts

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Room 604,
208 South LaSalle Street
Telephone RAndolph 6-4634
Chicago 4, Illinois

CINCINNATI
908 Dixie Terminal Building
Telephone DUnbar 1-1325
Cincinnati 2, Ohio

CLEVELAND
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Cleveland 14, Ohio

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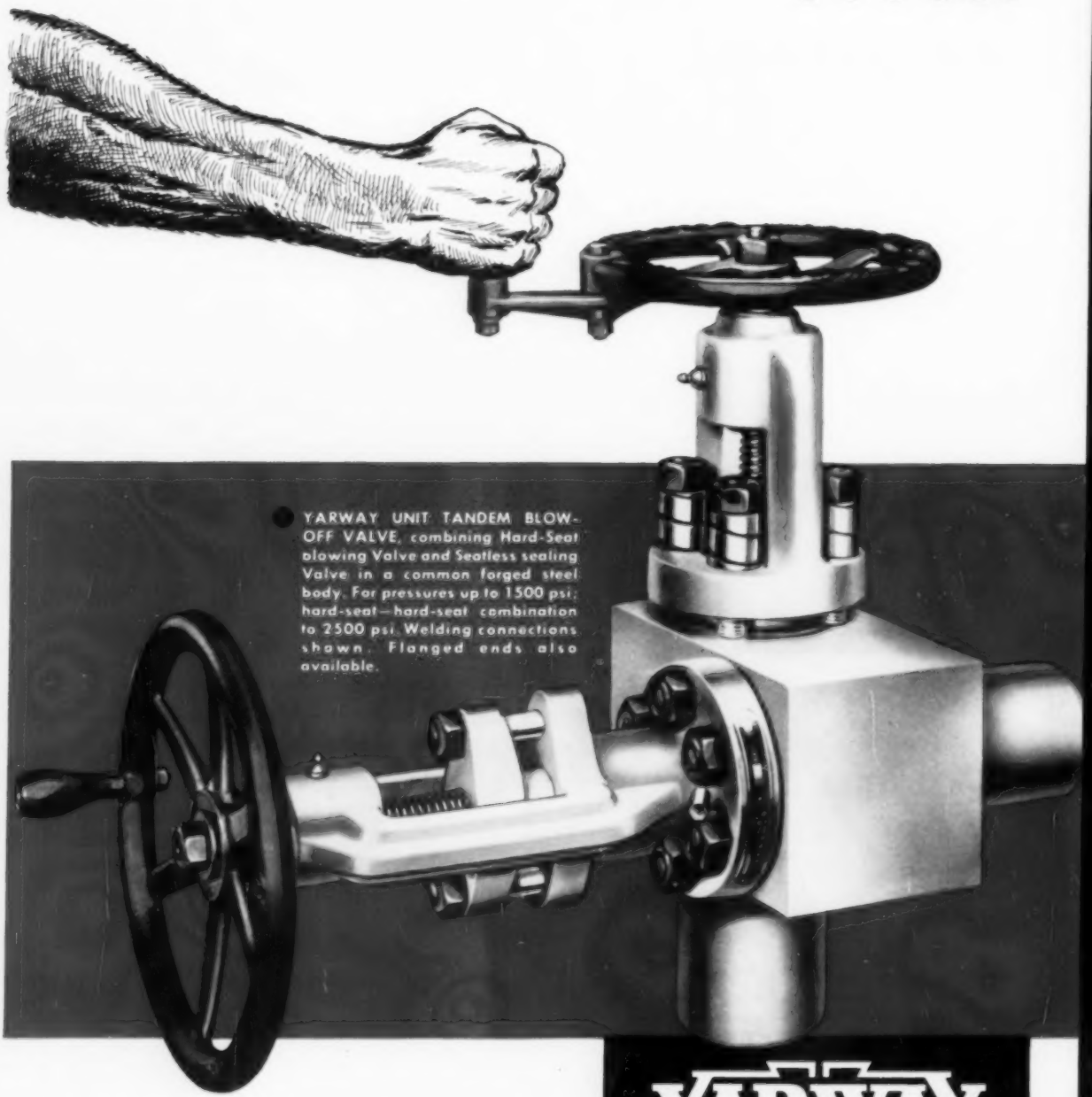

YARWAY UNIT TANDEM BLOW-OFF VALVE, combining Hard-Seat blowing Valve and Seatless sealing Valve in a common forged steel body. For pressures up to 1500 psi; hard-seat—hard-seat combination to 2500 psi. Welding connections shown. Flanged ends also available.

YARWAY

rugged blow-down service

YARWAY UNIT TANDEM BLOW-OFF VALVES

When boiler pressures are high you may not "blow-down" very often, but, man, when you do, you're glad those blow-off valves are rugged YARWAY Unit Tandems!

More than 80% of high pressure boiler plants are equipped with YARWAY *Blow-Off Valves,* and there's ample reason.

YARWAYS are strong, heavy-duty valves giving the important extra dependability needed for the severe combination of high pressures (hence high velocities), acid cleaning, and abrasion caused by precipitated solids.

YARWAY Blow-Off Valves also are relied upon to keep boiler level within desirable limits during quick starts of high pressure boilers.

Specify YARWAYS—to protect *your* boilers. Write for Bulletin B-434.

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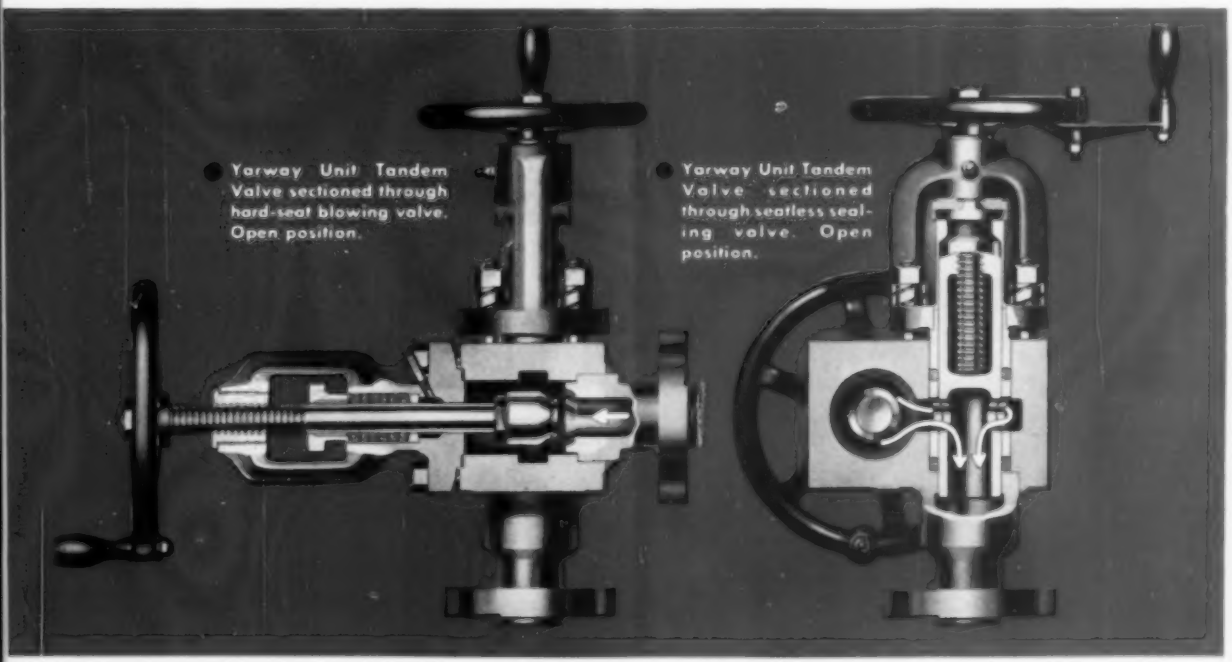

Yarway Unit Tandem Valve sectioned through hard-seat blowing valve. Open position.

Yarway Unit Tandem Valve sectioned through seatless sealing valve. Open position.

blow-off valves

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—INDEX OF HELPFUL BOOKLETS, BULLETINS, REFERENCE LITERATURE—

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STEAM TURBINES . . . FURNACES BOILERS, STOKERS, BURNERS

1 **PACKAGE BOILER** — Bulletin DK-1 describes Keeler's newest compact, low cost package unit (oil or gas fired) for small space requirements. Pressures to 325 psi, steam capacities to 45,000 lb/hr. — E. KEELER CO., Williamsport, Penna.

37 **STEAM BOILERS** — Bulletin SB-50, 16 pages — Describes and illustrates complete line of steam generating equipment, with sectional views, diagrams, plant applications. Condensed reference material for consulting and power engineers. — ERIE CITY IRON WORKS.

42 **SINGLE RETORT UNDERFEED STOKER**—Bulletin 350, 28 pages—Describes an efficient, compact, single retort stoker, mechanically driven either by electric or steam drive for burning sucessfully various grades of bituminous coal, 50 to 150 hp rated capacity. Replete with installation views and details. Many Southern plants described — DETROIT STOKER CO.

45 **OIL BURNERS**—Bulletin AD-102, 8 pages—Describes a complete line of oil burners for industrial and commercial applications, giving specifications, illustrations, features and applications.—CLEAVER-BROOKS CO.

48 **BOILER TUBES**—Booklet, available upon request, gives details concerning weights and other data of tubing and pipe, their working pressure scales, and the bending operations used in forming. Useful charts and engineering information. — BOILER TUBE CO. OF AMERICA.

56 **WATER TUBE BOILERS**—Booklet—Describes details of stoker—oil or gas or combination gas/oil, 10 to 350 hp to 250 psi; designed for easy conversion to any fuel. — QUEEN CITY ENGINEERING COMPANY, INC.

63 **PNEU-BLAST SOOT BLOWING** —Bulletin 1015, 4 pages—Describes Vulcan Pneu-Blast, or intermittent-air, soot blowing system. Illustrated with operating diagrams and installation photographs. — COPES-VULCAN DIVISION, BLAW-KNOX COMPANY.

76 **GAS BURNER** — Bulletin — Describes the Rectilinear gas burner, an application of the venturi principle which provides high input through narrow rectangular openings for firing — in a horizontal plane through fire doors or small openings over handfired coal grates or stokers — or for firing in a vertical plane on either side of stoker or oil burner. —THE WEBSTER ENGINEERING COMPANY.

95 **BOILER REFRACTORIES** — 20 page Bulletin R-36 contains detailed discussions of critical refractories areas in both refractory-lined and water-cooled boilers. — BABCOCK & WILCOX.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

118 **ROTARY PUMPS** — Catalog 955, 8 pages — Describes and illustrates complete line of Roper Rotary Pump products. Sizes range from ¾ to 600 gpm for pressures up to 1000 psi. Has listing of materials of construction, performance data and dimensions. — GEO. D. ROPER CORPORATION.

121 **HIGH SPEED CENTRIFUGAL PUMPS, SINGLE STAGE, DOUBLE SUCTION** — Bulletin 236 — Gives specifications, construction features, exterior and sectional views, dimensions, rating table of Type DBH high speed, single stage, double suction pumps, capacity 100 to 1,000 gpm, 200 to 400 ft. total head, 3500 rpm. — WARREN STEAM PUMP CO., INC.

122 **FAN EQUIPMENT** — Catalog 515 —Covers Clarage portable ready units, complete "package" fans for light-duty ventilating and industrial service. 18 sizes available, capacities 100 to 12,000 cfm. — CLARAGE FAN COMPANY.

124 **BLOWERS, FANS, HEATERS, DRIVES** — Bulletin B-4729 — Describes the comprehensive and complete line of equipment manufactured by American Blower for practically every known air handling requirement and for smooth transmission of power through Gyrol fluid drives. — AMERICAN BLOWER CORP.

127 **GENERAL FANS** — Bulletin T-158 — A general catalog — describes company's complete line of fans, including large commercial and industrial type fans designed to properly ventilate plants and other enclosures, and increase morale and efficiency.—The EMERSON ELECTRIC MFG. CO.

170 **HEAT EXCHANGERS** — Bulletins 120 & 124 describe Aero units which cool liquids & gases by evaporative cooling with atmospheric air, removing heat at rate of input, and precisely controlling temperature. Solves problems of water availability, quality or temperature. — NIAGARA BLOWER CO.

INSTRUMENTS—METERS CONTROLS—REGULATORS

202 **ORIFICE FLOW METERS**—Bulletin, 8 pages — Describes orifice meters used for the control of continuous blow-off of boilers, and of similar solids removal from steam and gas releasing surfaces, available in pressures up to 650 psi. — THE MADDEN CORPORATION.

205 **DRAFT GAGES** — Bulletins describe inclined, vertical tube, air filter gages, straight line and dial pointer type, minified draft and receiver type gages, velocity gages and pitot tubes, gas analyzers and steam calorimeters.—ELLISON DRAFT GAGE CO.

227 **LIQUID LEVEL GAGES** — Bulletin 11-1-51 — Describes gages for water level or liquid level, water columns and the like — bronze, all-iron, forged steel, stainless steel for all sorts of industrial, chemical and power plant service, with details as to available sizes, applications and installations.—ERNST WATER COLUMN & GAGE CO.

240 **HUMIDITY CONTROL** — Bulletin 302 — Describes the new Type 190 Hygrostat which gives accurate humidity control — pneumatically operated and sensitive to the slightest changes. — POWERS REGULATOR CO.

271 **FEEDWATER REGULATORS** — Bulletin 1009, Catalog — Describes the complete Copes line of boiler feed regulators, pump governors, pressure reducing valves, balanced valves, desuperheaters, liquid level controls and Hi-Lo water alarms. — COPES-VULCAN DIVISION, BLAW-KNOX COMPANY.

274 **MULTI-PURPOSE GAS REGULATORS** — Bulletin P-99 — Illustrates and describes the new Type "99" multi-purpose gas regulator, with capacity range from 0 to 143,000 cu ft/hr, inlet pressures up to 150 lb, and reduced pressures of 4 oz to 50 lb. — FISHER GOVERNOR CO.

283 **RECEIVER RECORDER** — Product Specification E12-5—Explains and illustrates the new Bailey Recorder which provides one to four continuous chart records of any measured variables which may be converted to pneumatic or electric signals. Contains application, operation, engineering, and ordering specifications. — BAILEY METER COMPANY.

297 **LIQUID LEVEL INDICATORS** — Bulletin WG-1824, 20 pages — Describes remote liquid level indicators with application and installation recommendations, wiring diagrams, etc., for use on boilers, heaters, storage tanks and other vessels in industrial and power process plants. — YARNALL-WARING COMPANY.

PLANT EQUIPMENT—WELDING TOOLS—PROCESS SPECIALTIES

315 **TANKS OF STEEL AND ALLOYS** — Catalog 102-P&BS — All types of tanks for hot water storage, bulk liquid storage, oil or chemical storage, and other unfired pressure vessel use. — J. J. FINNIGAN CO.

357 **MODERN LUBRICATION** — Bulletin — Describes methods of modernizing with Manzel lubricators — pumps and compressors, wood and steel working machinery, presses, production and handling equipment. — MANZEL, DIVISION OF HOUDAILLE-HERSHEY CORP.

366 **INDUSTRIAL HEATERS** — Bulletin RC-10-53 — Describes the Thermobloc heat producing machine producing heat in any desired quantity and placing it where needed — an independent unit heater using the economical principles of direct heat transfer — low cost, automatic operation, tempered air, ease of installation, complete range of sizes from 100,000 Btu per hour to 1,000,000 Btu per hour. — PRAT-DANIEL CORP., THERMOBLOC DIV.

370 **WELDING ROD GUIDE** — 32 page DirectoRod Guide helps you select from 160 rods those that will give you the largest savings per job, whether production, maintenance or salvage. — EUTECTIC WELDING ALLOYS CORP.

378 **WROUGHT IRON** — General Catalog — Contains complete technical information on all Byers products, a discussion of the differences between wrought iron and steel, a section on specifications, pipe standards and measurements, and how to order tubular products. — A. M. BYERS COMPANY.

391 **FLEXIBLE DUCT** — Specification Data Brochure — Describes Flexflyte, the aircraft type duct having minimum weight, maximum flexibility,

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122	124	127	170	202	205	227	240	271	274	283
297	315	357	366	370	378	391	415	425	441	455
480	483	491	516	518	528	583	595	596	602	614
621	643	693	694	703	714	728	774	775	805	820
831	854	861	902	927	934	937	N-1	N-2	N-3	N-4
N-5	N-6	N-7	N-8	N-9	N-10	N-11	N-12	N-13	N-14	N-15
N-16	N-17	N-18	N-19	N-20	N-21					

Also send further information on following New Equipment (page 86).

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B-12	B-13	B-14								

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temperature extremes (minus 100 F to plus 625 F) high plus or minus pressure, petroleum resistance, flame resistance. — FLEXIBLE TUBING CORPORATION.

PIPING, VALVES, FITTINGS STEAM SPECIALTIES, TRAPS

415 WELDING PIPE FITTINGS — New catalog illustrates where to use Weldolet and Thredolet branch pipe fittings. Specific areas of application shown with correct installation procedure. Describes complete range of stainless, alloy and non-ferrous fittings and Bonney's new marking standard. — BONNEY FORGE & TOOL WORKS.

425 THERMODYNAMIC STEAM TRAP — Bulletin 255-44 — Describes simple low maintenance steam trap which features no valve-closing mechanisms to wear or stick, no critical clearances to choke, and no gaskets to leak. Only moving part is a solid stainless steel disc. Same trap for all loads and pressures 10-600 psi. Operates against back pressures up to 50% of inlet pressure. — SARCO COMPANY, INC.

441 ALUMINUM PIPE JACKETING — Folder J-25 — Gives complete applications and instructions for the use of Childers jacketing for weather-proofing of insulated lines, towers, vessels and tanks. Illustrated with detail drawings.— CHILDERS MFG. CO.

455 PLASTIC VALVES & FITTINGS — Brochure covers company's extensive line of new corrosion-resistant valves and pipe fittings molded from rigid polyvinyl chloride. — WALWORTH COMPANY.

480 PIPING FLEXIBILITY ANALYSIS — 12 page booklet shows how various flexibility analyses techniques can cut piping design and construction costs. —THE M. W. KELLOGG COMPANY.

483 UNIONS & SWING CHECKS — Catalog 11, 24 pages — Gives engineering data and specifications on a complete line of hot forged steel pipe unions and swing check valves. Special section devoted to Double-Start Unions, which provide faster opening and closing. — CATAWISSA VALVE & FITTINGS COMPANY.

491 CONTROL VALVES — Catalog 1500-B, illustrated — Describes complete line of Domotor, solenoid-operated and handwheel single seat control valves for handling difficult fluids under extremes of temperature and pressure. Offers full, unrestricted flow, positive plug and seat alignment and directional flow flexibility. — THE ANNIN COMPANY.

MAINTENANCE PACKING GASKETS, LUBRICATION

516 OIL AND GREASE SEALS — Catalog No. 10, 100 pages — Describes and illustrates types of Klozure oil and gas seals for bearings, with typical applications and complete list of sizes and types—also a mechanical pressure seal for rotary shafts — THE GARLOCK PACKING COMPANY.

518 PACKINGS & GASKET CUTTERS — Catalog, 50 pages — Describes "The Packing That Packs All," manufactured in a variety of forms such as coil, spool, loose, rings, sets, spiral, and sheet. Designates materials available. Covers gasket cutters and related items. Illustrated with photographs and drawings. — THE ALLPAX COMPANY, INC.

528 INDUSTRIAL PRODUCTS — Bulletin GI-6A, 40 pages — Describes J-M industrial products intended to save industry millions of dollars every

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N-16	N-17	N-18	N-19	N-20	N-21					

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year — insulations, refractory products, asbestos-cement pipe, packings and gaskets, electrical products, friction materials, roofing and siding, flooring, partitions and ceilings. — JOHNS-MANVILLE SALES CORPORATION.

583 **CONDENSATE CORROSION** — Bulletin No. 35, 4 pages — Describes the causes of condensate corrosion in return lines, heaters, tanks and describes methods of stopping it with various Nalco products. Well illustrated. — NATIONAL ALUMINATE CORP.

595 **PLANT LUBRICATION** — The Lubriplate Service Handbook — Gives valuable information on the subject of lubrication in all its forms, intended to be of everyday use to plant superintendents, managers, maintenance engineers and those in charge of plant production and maintenance. — LUBRIPLATE DIVISION, FISKE BROTHERS REFINING CO.

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ENGINES, DRIVES POWER TRANSMISSION MATERIALS HANDLING

602 **TRAMRAIL SYSTEMS** — 12 page Booklet 2008-L covers principal components used in tramrail systems, stresses developed in tracks, and track peening and its solution. Gives case study illustrations. — CLEVELAND TRAMRAIL DIV.

614 **VERTICAL TRANSPORTATION** — Elevator Catalog — Describes and illustrates details of passenger and freight elevators, escalators, dumbwaiters, and modernization and maintenance equipment for use in industrial, utility and service plants. — OTIS ELEVATOR CO.

621 **POWER TRANSMISSION AND EQUIPMENT** — Catalog 40 — Gives comprehensive details of a complete line of power transmission including V-Belt drives, flat belt drives, pulleys, gears, chains, sprockets. — Industrial Division of CONTINENTAL GIN CO.

643 **AUTOMATIC MONORAIL TRANSPORTATION** — Bulletin AD-1A, 12 pages — Describes a complete range of automatic dispatch monorail systems for transfer of materials by remote control. — AMERICAN MONORAIL CO.

693 **ADJUSTABLE VARIABLE SPEED DRIVES** — Condensed Catalog No. 168T — For engineers and salesmen in making estimates on speed control for any machine or process. Prices, dimensions, applications for ½ hp to 25 hp motors, enclosed, drip-proof standard or special mounted. — STERLING ELECTRIC MOTORS, INC.

694 **STOCK ROLLER CHAINS AND SPROCKETS** — Catalog No. 754, 66 pages — Describes and illustrates Stock roller chains and sprockets including minimum and finished bore, ready-to-use Taper-Lock bushed sprockets, as well as chain selection and application data. — DIAMOND CHAIN COMPANY, INC.

WATER TREATMENT, HEATING, VENTILATING, AIR CONDITIONING REFRIGERATION, DUST & FUME CONTROL

703 **AIR CONDITIONING** — Bulletins 112 & 122 describe "controlled humidity" method where cooling and heating functions are made completely separate from adding or taking away moisture. No moisture sensitive instruments needed in flexible and compact design. — NIAGARA BLOWER CO.

714 **INFRA-RED UNIT HEATERS** — Bulletin P-154 — Describes "Panelbloc" infra-red unit heaters available in 62,500 btu and 125,000 btu input. No fan, motor, or electrical connection is needed. Heating is accomplished by guided radiation. The units may be used with any commercial type gas fuel. — THERMOBLOC, DIVISION OF PRAT-DANIEL CORPORATION.

728 **DEMINERALIZATION** — Bulletin 5800, 40 pages — Explains the treatment of water by demineralizing, principles of ion exchange, applications of many anion and cation exchange materials. A series of curves gives estimates of cost, design and operation. — COCHRANE CORP.

774 **AIR CONDITIONING** — Bulletin 195-A, 8 pages, describes refrigerating, ice making and air conditioning equipment and their services to industrial plants, with photograph and drawing illustrations. "Check List of Typical Frick Equipment." — FRICK CO.

775 **WATER TREATMENT FOR COOLING TOWERS** — Bulletin 28X7501A — Discusses types of cooling systems and corrosion problems of metal surfaces — inorganic scaling — organic growths such as algae and slime, delignification of wood in towers. Selection data given. — ALLIS-CHALMERS MFG. CO.

ELECTRICAL

805 **POWER FACTOR CORRECTION** — 28 page catalog shows how you can cut power costs by installing correction capacitors on motors and other inductive electrical equipment. Greater loads can be handled from existing circuits. Wiring, transformer and switchgear costs can be greatly minimized in new installations. — SPRAGUE ELECTRIC CO.

820 **MOTOR CONTROL UNITS** — Bulletin 800-T — Describes oil tight solenoid motor controlled units for machine tools and similar equipment with various accessory equipment to fit the particular job. — ALLEN-BRADLEY CO.

831 **ELECTRIC HEATING CABLE** — Bulletin F-1527 — Describes Thermwire," a low cost, easily applied flexible electric heating cable, a versatile new product with many uses and applications in industrial and commercial processing. — EDWIN L. WIEGAND CO.

854 **ADEQUATE WIRING** — Booklet "Wire Ahead" — Discusses preventive maintenance in electrical systems —the symptoms of inadequate wiring— and plans for anticipating electrical demands. — ANACONDA WIRE & CABLE COMPANY.

861 **ELECTRICAL PROTECTION SYSTEM** — Bulletin HCS — Describes "Fusetron" dual-element fuses which save recalibration and maintenance costs, eliminates down-periods caused by needless blows and saves on installation costs. Available in all sizes from 1/10 to 600 amperes, both 250 and 600 volt types. Also in plug types for 125 volt circuits. — BUSSMANN MANUFACTURING COMPANY.

MISCELLANEOUS . . . SAFETY, BUILDING EQUIPMENT, METALS

902 **BUILT-UP ROOFING** — Bulletin 5591, 16 pages — General requirements on built-up roofing specifications including instructions for over wood, precast or poured gypsum; spray pond roofs; concrete, precast concrete slab; information on fire-resistant vapor barrier flashing details, etc. — THE PHILIP CAREY MFG. CO.

927 **FLOOR GRATING** — Catalog No. AT254 — Describes company's free planning and checking service for completely custom fabricated floor grating installations. — BORDEN METAL PRODUCTS CO.

934 **GRATING, FLOORING, TREADS** — Catalog — Describes the design and value of Bonderite processed "Weld-forged" steel grating, flooring and stair treads for corrosion resistance, paint adhesion and prolonged life. — KERRIGAN IRON WORKS, INC.

937 **STEEL MEASURING TAPES** — Complete catalog describes full line of measuring tapes from 6 to 100 ft, including wide blade tape with upright measurements. — EVANS RULE CO.

DOUBLE BOILER BLOW-OFF SAFETY

1

Quick-Operating
EVERLASTING
Straight-Through Valve

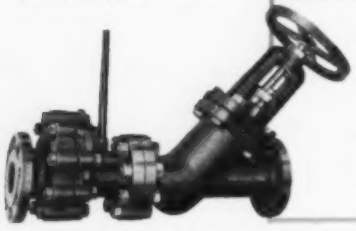
The standard Everlasting design which opens with a quarter-turn of the lever and closes with a drop-tight seal that actually improves with use.

2

Shock-Resisting
EVERLASTING
Angle Valve

Specially designed and stoutly constructed to withstand severe service and the shocks and abrasion of blow-down solids.

Conform with ASME codes. Available in a range of sizes for pressures up to 600 psig. *Write for descriptive bulletin.*



EVERLASTING DUPLEX UNITS

also available with Y Valves and in any combination of Quick-Operating, Angle and Y Valves.

For "everlasting" service, use

EVERLASTING Valves

EVERLASTING VALVE CO.
53 FISK STREET, JERSEY CITY 5, N. J.

EV 21

$ $ $ For Your Ideas

SP&I's "Helping the Man-in-the-Plant" department (see page 66) features, ideas, methods and gadgets—many plant-tested in Southern and Southwestern industrial power and service plants.

Send your ideas, methods and short-cuts to Southern Power & Industry. Payment is made for suitable material—a photo or rough sketch will make your idea more valuable.

Articles from maintenance and production men in Southern and Southwestern plants are preferred. Material must not have appeared elsewhere nor been sent to another publication.

Southern Power & Industry
806 Peachtree St., N.E.
Atlanta 5, Georgia

HARLLEE BRANCH, JR. *Portrait by Fabian Bachrach*

"We consider it a privilege to make the Payroll Savings Plan available to all our people"

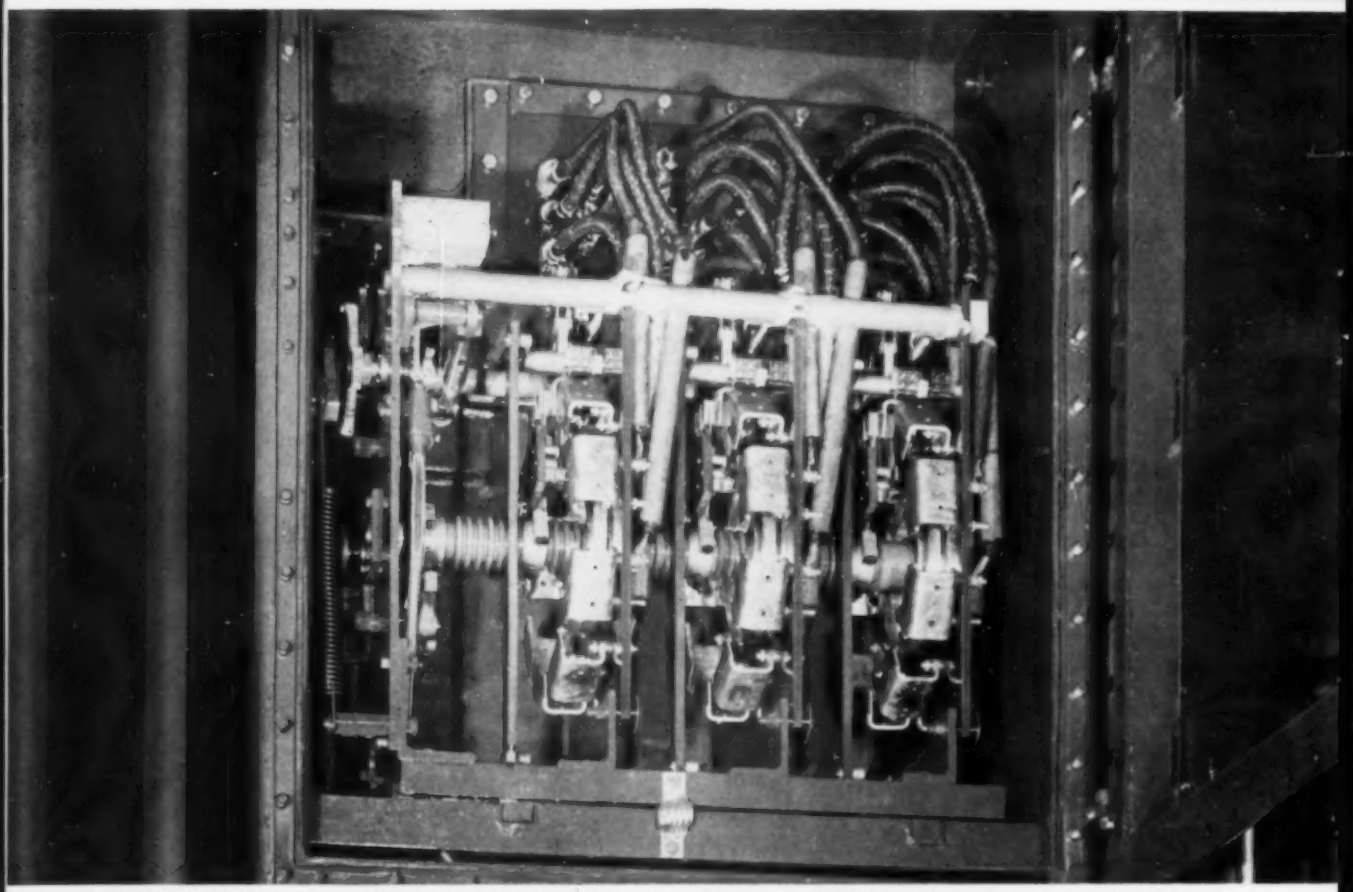
As President of Georgia Power Company, Mr. Harllee Branch, Jr., can be proud of his company's Payroll Savings Plan—more than 50% of Georgia Power's employees are Payroll Savers. They are putting more than $423,000 into U.S. Savings Bonds each year. But, Mr. Branch's interest goes beyond his own company Plan. A few months ago, as President of the Edison Electric Institute, he asked all the 185 member companies in the electric utility industry to join in an industry-wide effort to increase employee percentages in their Payroll Savings Plans.

First results of the industry campaign are now coming in. Gulf Power Company has reached 87.3% employee participation... Utah Power and Light employees have enrolled 69.6% . . . Wisconsin Electric Power reports 69.8% . . . Wisconsin-Michigan Power Company, 62% . . . Wisconsin Public Service, 57.6% . . . Lake Superior District Power, 52%.

Has every employee in *your* company been offered an opportunity to enroll in the Payroll Savings Plan? If not, communicate with Savings Bond Division, U.S. Treasury Department, Washington, D.C. Your State Sales Director will show you how easy it is to conduct a person-to-person canvass.

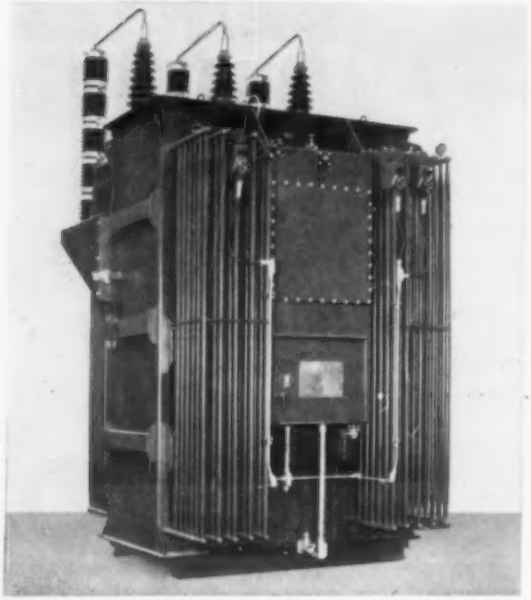
The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

SOUTHERN POWER & INDUSTRY

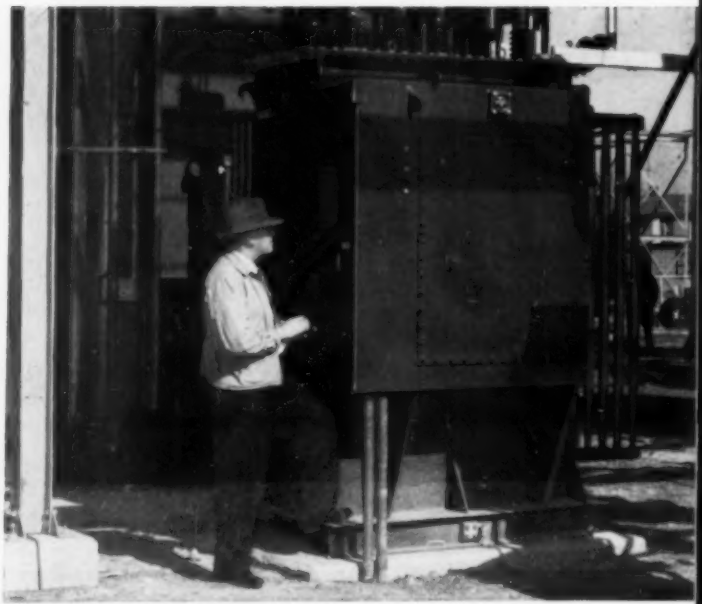


QUIETER OPERATION. Tap-changing switch compartment now houses motor and drive assembly completely immersed in oil to muffle noise and provide permanent lubrication. Formerly, motor plus assembly was in air-filled control compartment. Mounting under oil, and redesigning of geneva gear for smooth driving-pin entry—without impact—has cut peak noise level about 20 db.

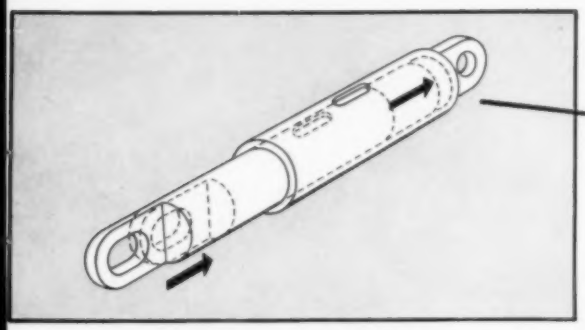
Maintenance reduced 50% by new



RM MEDIUM TRANSFORMERS employ the new LRT-68 load-tap-changing switch in LTC models.

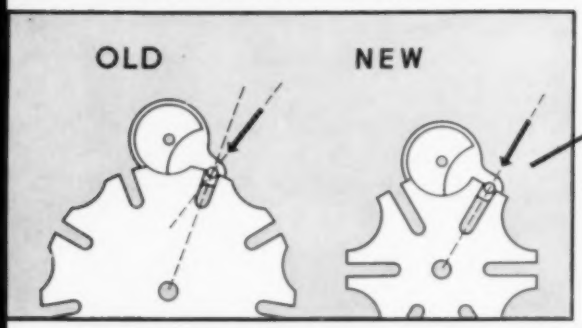


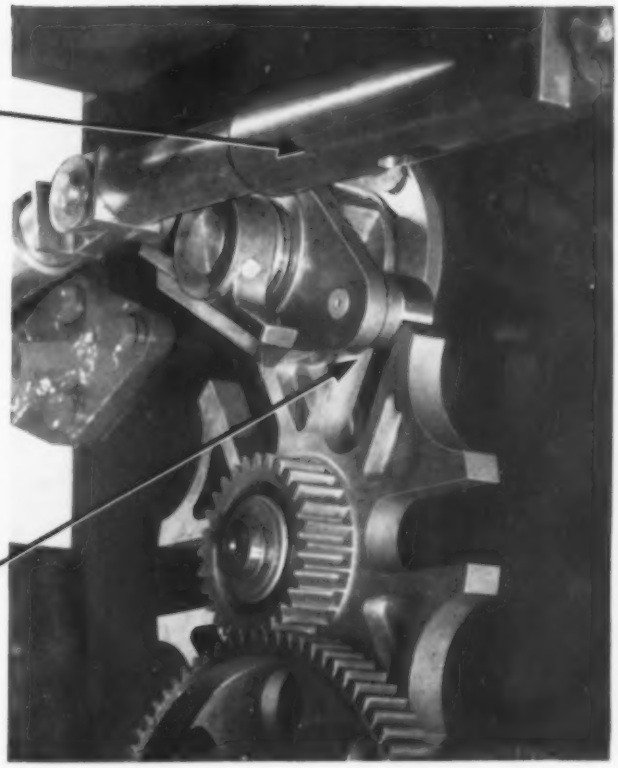
STEP REGULATORS up to 1000 kva will now have the added advantages of the new LRT-68 load-tap-changing switch.



HYDRAULIC DASHPOT

NEW GENEVA GEAR





REDUCED MAINTENANCE. LRT-68 incorporates new hydraulic dashpots and redesigned geneva gear. The two dashpots provide (1) optimum contact separation speed, and (2) reduced engagement velocity, for minimum contact erosion and less secondary arcing.

Geneva gear driving-pin now enters gear slot smoothly, parallel to the side of the slot. Previous design entered at 19° angle. Gentle acceleration and deceleration reduces jarring and mechanical wear. This, plus thicker contact tips, results in 100% increase in tip life.

General Electric load tap changer

Peak operating noise cut 20 db with LRT-68 switch now used on RM transformers and three-phase step regulators

DOUBLED CONTACT LIFE of General Electric's new LRT-68 load-tap-changing switch means routine inspection and maintenance can be *cut in half* on G-E LTC Medium Transformers, and on three-phase step voltage regulators up to 1000 kva.

These savings have been made possible by: (1) reducing the amount of contact wear per operation, through redesigning the geneva gear (providing smoother operation) and adding hydraulic dashpots (for optimum separation and engagement speeds) and (2) using heavier, thicker contact tips, from which more material can wear before replacement is necessary.

REDUCED OPERATING NOISE results from a complete redesign of G.E.'s load-tap-changer. This means increased consumer good will and less investment in sound-absorbing walls and barriers, when LTC equipment is installed in residential areas.

For full information on this new load-tap-changing mechanism and the medium transformers and three-phase, step voltage regulators on which it will be used, contact your nearest General Electric Apparatus Sales Office, or write Section 416-4, General Electric Company, Schenectady 5, New York.

Progress Is Our Most Important Product

GENERAL ELECTRIC

HOW TO GET

New Economy

IN

EFFECTIVE VESSEL INSULATION

WITH

Copr-fibre

BLANKET INSULATION AND METAL JACKETING

INSULATION SUPPORT RING
VESSEL SHELL
METAL BANDING
Copr-fibre BLANKET LACED TOGETHER AND LACED TO SUPPORT RINGS
INTEGRAL VAPOR BARRIER ON METAL JACKET
SHEET METAL SHEATHING

Insulating vessels and similar equipment with Copr-fibre Blankets and sheet metal jacketing provides an insulation of *greater efficiency* than can ordinarily be expected — and yet at a *lower cost*. This better method (together with complete materials and application specifications) is explained and illustrated in a highly informative brochure just published. If you have not received one, send the coupon today for your free copy of Bulletin 541.

Copr-fibre Blankets with metal jacketing give these advantages:

- **Low initial application cost.**
- **Higher insulating efficiency.**
- **Effective weather protection.**
- **Better appearance.**
- **Longer vessel life.**
- **Less repair at lower cost.**

MAIL COUPON NOW

FORTY-EIGHT INSULATIONS, Inc.
Telephone: AUrora 6-8578
AURORA, ILLINOIS

Yes, send me a copy of 48's Bulletin 541.

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

$ $ $ For Your Ideas

SP&I's "Helping the Man-in-the-Plant" department (see page 66) features, ideas, methods and gadgets—many plant-tested in Southern and Southwestern industrial power and service plants.

Send your ideas, methods and short-cuts to Southern Power & Industry. Payment is made for suitable material—a photo or rough sketch will make your idea more valuable.

Articles from maintenance and production men in Southern and Southwestern plants are preferred. Material must not have appeared elsewhere nor been sent to another publication.

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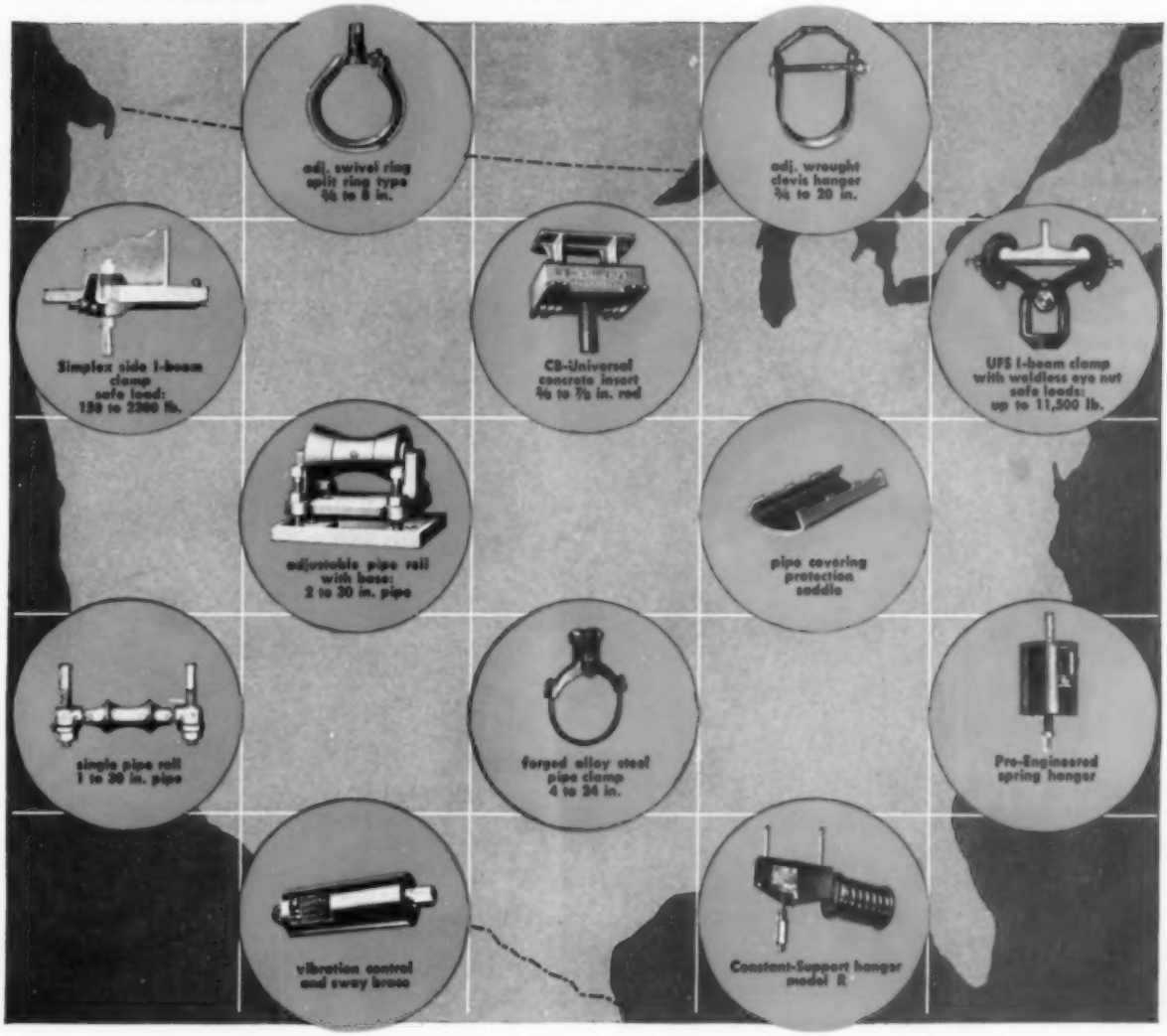
GRINNELL OFFERS YOU


adj. swivel ring split ring type ¾ to 8 in.
adj. wrought clevis hanger ¾ to 20 in.
Simplex side I-beam clamp safe load: 150 to 2300 lb.
CB-Universal concrete insert ⅜ to ⅞ in. rod
UFS I-beam clamp with weldless eye nut safe loads: up to 11,500 lb.
adjustable pipe roll with base: 2 to 30 in. pipe
pipe covering protection saddle
single pipe roll 1 to 30 in. pipe
forged alloy steel pipe clamp 4 to 24 in.
Pre-Engineered spring hanger
vibration control and sway brace
Constant-Support hanger model B

the largest line, widest distribution, finest service in

PIPE HANGERS AND SUPPORTS, ANYWHERE!

Grinnell is America's No. 1 supplier of pipe hangers and supports. There is no other company, anywhere, which provides as thorough and complete distribution service; makes as complete a line; or can cooperate as fully with you on *all* your piping assignments..

Through Grinnell's coast-to-coast system of strategically located warehouses and jobbers, for example, you can purchase Grinnell Hangers out of stock, anywhere. Moreover, Grinnell, alone, of all manufacturers, maintains a staff of trained personnel that is ready to work with you "on the job", anywhere, in solving any problem connected with erection of pipe hangers and supports.

Profit by Grinnell's nationwide service, large-capacity manufacturing facilities, and practical knowledge gained during more than 100 years of service in the piping field. Next time, specify Grinnell Pipe Hangers.

GRINNELL

AMERICA'S #1 SUPPLIER OF PIPE HANGERS AND SUPPORTS

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermoller unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

J-M 85% Magnesia is lightweight . . . easy for workmen to install half-sections on this 10" steam line. Insulation work at the Grace Chemical plant was performed by Young Sales Corporation of St. Louis. Engineering and construction was directed by Foster Wheeler Corporation of New York.

Your Btu's and dollars go further when you specify **Johns-Manville 85% Magnesia**

. . . the choice of insulation engineers at Grace Chemical's new Memphis plant

INDUSTRY'S LONG-TIME standard for temperatures to 600F is still your best insulation buy. For J-M 85% Magnesia provides high insulating value, easy application, long life, initial low cost and minimum maintenance. That's why insulation engineers consistently specify J-M 85% Magnesia for modern installations like Grace Chemical's new anhydrous ammonia-urea plant. That's why it will pay you to specify J-M 85% Magnesia for your new plant or modernization program.

To assure you maximum value from your insulation dollar, Johns-Manville gives you complete drawing-board-to-job-site service. You get expert recommendations by the world's most experienced insulation engineers . . . plus expert installation by authorized J-M Insulation Contractors. Write today for further information on J-M 85% Magnesia and Johns-Manville's unmatched facilities to solve your insulation problems. Address Johns-Manville Box 60, New York 16, N.Y. In Canada, Port Credit, Ontario.

J-M 85% Magnesia also comes in block form. Here you see it being applied to a vertical drum at a New Jersey petroleum refinery.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville *first-in* INSULATION

MATERIALS · ENGINEERING · APPLICATION

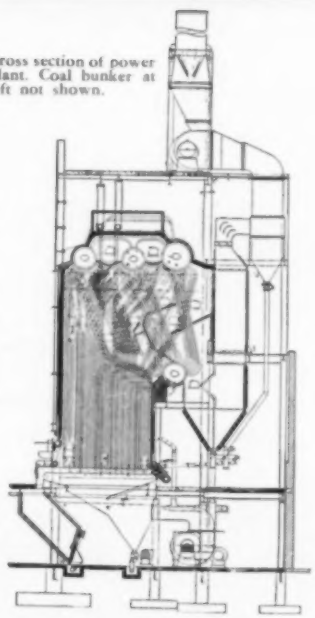
John Strange Paper Company increases output and cuts costs burning coal the modern way

Steam and electric power represents a considerable percentage of overall costs in paper mill production. In addition to this cost problem, the power plant of the John Strange Paper Co., Menasha, Wis., lacked sufficient capacity to meet the mill's demand for steam and power.

In an effort to trim costs and increase capacity, the company called in the consulting firm of Cummins & Barnard, Inc., Ann Arbor, Mich., to recommend a modernization program. Based on those recommendations, today John Strange burns coal in highly efficient steam-generating equipment. The remodeled installation includes completely modern coal-handling and pneumatic ash-handling equipment as well as two automatic control systems. Costs have been curtailed; steam and power supply is dependable. Most important, the mill machinery operates at higher speed, resulting in a 10% increase in production.

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

NATIONAL COAL ASSOCIATION
Southern Building, Washington 5, D. C.

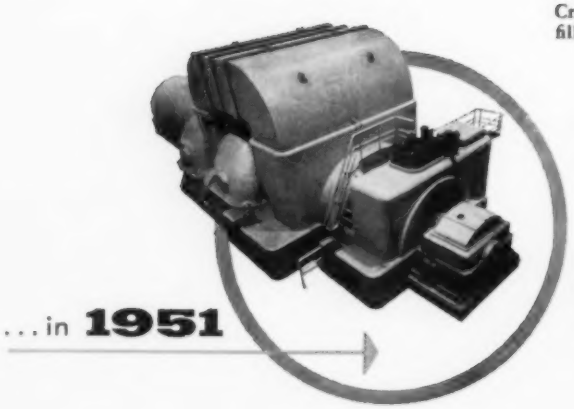


Cross section of power plant. Coal bunker at left not shown.

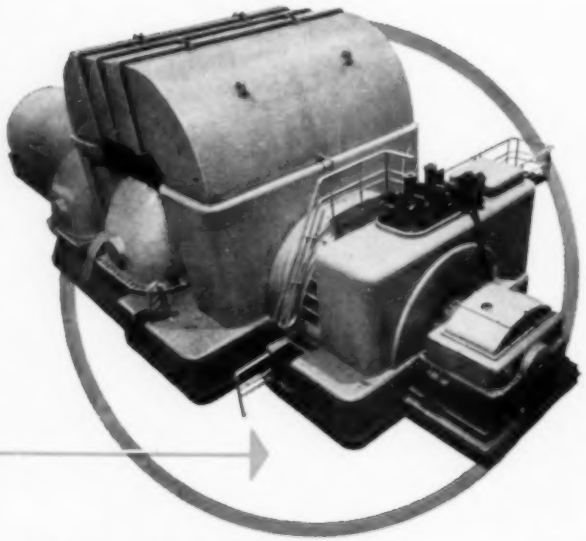
facts you should know about coal

In most industrial areas, bituminous coal is the lowest-cost fuel available • Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar • Automatic coal and ash handling systems can cut your labor cost to a minimum • Coal is the safest fuel to store and use • No smoke or dust problems when coal is burned with modern equipment • Between America's vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable.

Units No. 1 and No. 2 are 150,000 KW General Electric cross compound turbine generators. Unit No. 1 was installed in 1951, and unit No. 2 in 1953, at the Indiana and Michigan Electric Company's Tanners Creek Plant, Lawrenceburg, Indiana. Both lubricating systems were filled with 6590 gallons of Gulfcrest.



...in **1951**



...in **1953**

and again in **1955**

the Indiana and Michigan Electric Company selected

GULFCREST OIL

to provide long range turbine protection

Gulfcrest has an unmatched record of outstanding performance in every make and type of steam turbo-generator. There are two good reasons for its recognition as the world's finest turbine oil.

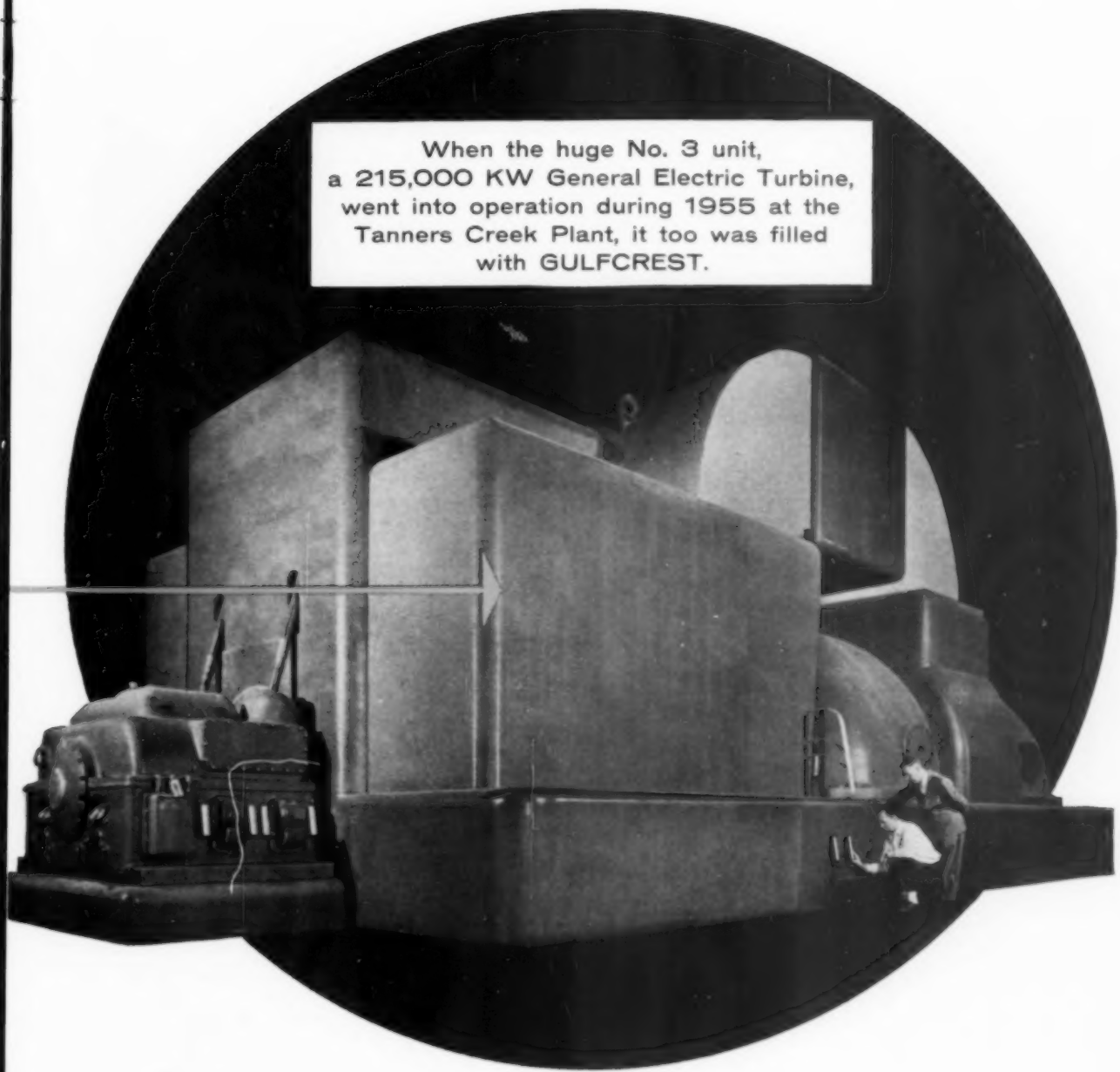
First, crudes are carefully selected for the best turbine oil properties, then put through the usual refinery steps for oils of this type. Next, the oil is Alchlor Processed—Gulf's exclusive super-refining step which removes the unstable hydrocarbons that form sludge, harmful acids, and accelerate oxidation. Special inhibitors are also added to increase oxidation stability, prevent foam and protect against corrosion.

In several large turbines Gulfcrest has been in continuous service for over twenty years. The systems are still free from sludge or rust, and neutralization numbers of the oil remain remarkably low.

The next time you fill a turbine system specify Gulfcrest—and insure safe, long-lasting protection. Consult the telephone directory for the number of your nearest Gulf office and have a Gulf Sales Engineer recommend the right grade of this outstanding oil for your turbines.

Gulf Oil Corporation • Gulf Refining Company

1822 GULF BUILDING, PITTSBURGH 30, PA.


When the huge No. 3 unit,
a 215,000 KW General Electric Turbine,
went into operation during 1955 at the
Tanners Creek Plant, it too was filled
with GULFCREST.

GULF

THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

PERFORMANCE VERIFIED / by acid test

Even before a Powell Valve is made, it must pass the acid test. For quality control of Powell Valves begins not with manufacture—but with the very materials which go into Powell Valves.

Constant laboratory control is one of the many ways we make certain that Powell Valves will give dependable flow control. Another is the final step of manufacture of these precision-built valves: *every Powell Valve is subjected to an actual line test.*

Because of Powell's painstaking quality control, valve repair is cut to the minimum and plant shut down through valve failure is substantially reduced. Records of performance the world over prove it.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our COMPLETE *quality line* which has PERFORMANCE VERIFIED.

The Wm. Powell Company, Cincinnati 22, Ohio . . . 110th YEAR

PERFORMANCE PV VERIFIED

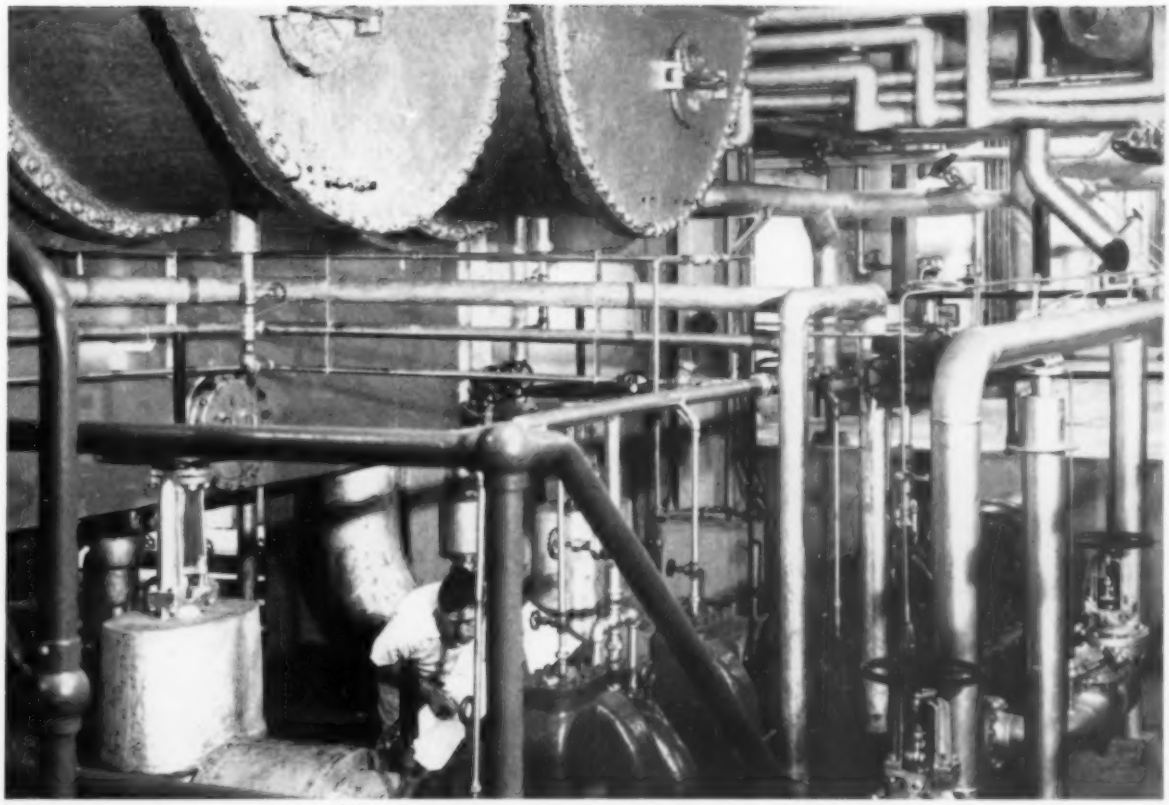
FIG. 3003 WE—Steel Gate Valve For 300 Pounds W.S.P.

FIG. 11365—Steel Pressure Seal Horizontal Lift Check Valve For 1500 Pounds W.S.P.

FIG. 11323—1500-Pound Motor Operated Steel Pressure Seal Gate Valve.

POWELL VALVES

BRONZE, IRON, STEEL AND CORROSION RESISTANT VALVES.



Deaerating Condenser Exceeds Guaranteed Performance

	guarantee	actual performance
Condensate depression	0	0
cc of oxygen per liter in condensate	0.01	no measurable amount

This 50,000 sq. ft. steam surface condenser was installed by Lummus for Carolina Power & Light Company, Goldsboro Steam Electric Generating Plant, Goldsboro, N. C., Ebasco Services, consulting engineers. The unit is a deaerating type condenser of Lummus' patented design, serving a 66,000 KW turbine.

After three years of operation, it is still meeting and exceeding the original performance guarantees, as tabulated above, under all conditions of operation.

The unit was designed to condense 400,000 pounds/hr. of exhaust steam from the turbine at 2.10" Hg. abs. and deaerate the condensate. In addition to the condensate the unit must deaerate 50,000 pounds/hr. of drains from feed-water heaters and 100,000 pounds/hr. of cold make-up water at ambient temperature. The drains and make-up water enter the condenser above the tube bank and are deaerated in the Lummus patented deaeration section. Tests run with supersaturation of air in the cold make-up were handled with complete removal of oxygen and other dissolved gases without any unbalancing of the system.

Lummus-designed equipment gives results of this caliber consistently. May we sit in with your engineers on the project coming up?

THE LUMMUS COMPANY, Heat Exchanger Division, 385 Madison Avenue, New York 17, N.Y. • Atlanta • Boston Chicago • Cincinnati • Cleveland • Dallas • Denver Detroit • East Chicago (Indiana) • Houston • Kalamazoo Kansas City • Los Angeles • Minneapolis • Nashville New Orleans • Newton (Iowa) • Niskayuna (New York) Omaha • Pittsburgh • Salt Lake City • San Francisco Springfield (Mass.) • Syracuse • Toledo • Wayne (Pa.) Athens • Buenos Aires • Caracas • The Hague • Lima London • Mexico City • Montreal • Paris • Rome • San Juan

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Steam Surface Condensers • Evaporators • Extraction Bleeder Heaters • Steam Jet Air Ejectors • Steam Jet Refrigeration • Barometric Condensers • Heat Exchangers for Process and Industrial Use • Process Condensers Pipe Line Coolers.

LUMMUS
HEAT EXCHANGER DIVISION

LUMMUS

THE LUMMUS COMPANY, HEAT EXCHANGER DIVISION • 385 MADISON AVENUE, NEW YORK 17, N. Y.

70 Years ago we used ads like this to tell buyers about Bell & Zoller Coal. We've done a lot of growing—and made a lot of changes since then. • But one thing hasn't changed—the famous free-burning, low ash, high heat-producing quality of Bell & Zoller products. • The proudest statement we can make on our 70th Anniversary is the same one we could make in 1886: Superb Quality Coal, We Mine It—ZEIGLER, MOSS HILL, ORIOLE, MURDOCK, LIBERTY SMOKELESS, BUCKHORN, SPARTA... and you can get it today through your nearest Bell & Zoller office.

Bell & Zoller Coal Company

70 YEARS OF SERVICE TO COAL USERS

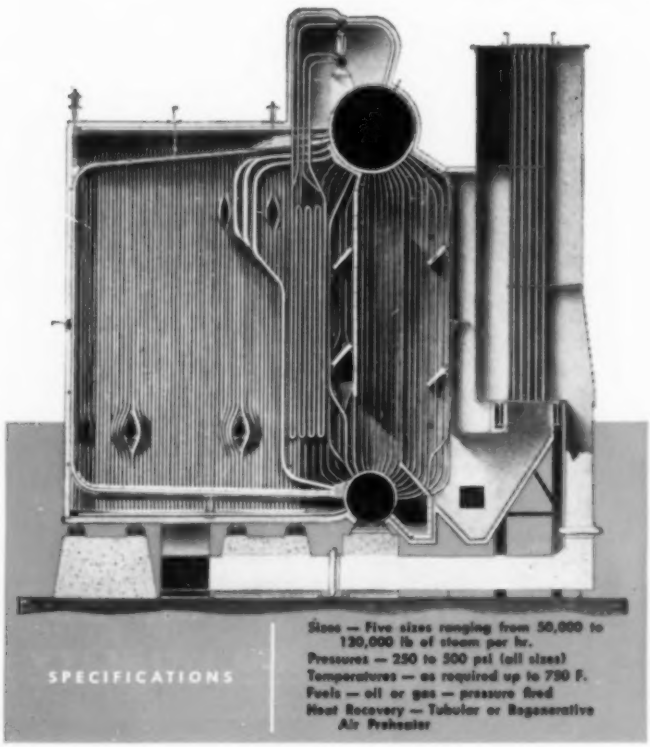
BELL BUILDING, CHICAGO 1, ILLINOIS

Cleveland • New York • St. Louis • Minneapolis
Omaha • Milwaukee • Louisville • Washington, D.C.
Terre Haute, Ind. • Mount Hope, W.Va.

These performance-proved features make Combustion's

NEW VU-55

today's outstanding boiler buy for capacities from 50,000 to 120,000 lb of steam per hour!



SPECIFICATIONS

Sizes — Five sizes ranging from 50,000 to 120,000 lb of steam per hr.
Pressures — 250 to 500 psi (all sizes)
Temperatures — as required up to 750 F.
Fuels — oil or gas — pressure fired
Heat Recovery — Tubular or Regenerative Air Preheater

The VU-55 – a development of Combustion's basic Vertical Unit design – offers features never before available in a boiler of its capacity range. If your steam needs call for a unit in the 50,000 to 120,000-lb class, you will find it worth while to consider the economic and operating advantages assured by these VU-55 features:

TANGENTIAL FIRING. More than 20 years of application experience have established the exceptional advantages of tangential firing, illustrated and briefly described below. About 90 percent of Combustion's large utility installations use this advanced method of firing.

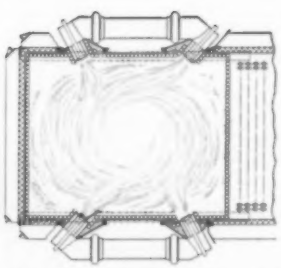
DOUBLE WALL, PRESSURIZED CASING. The latest development in casing construction for pressure firing of boilers in the size class of the VU-55, this casing, as illustrated and described below, is designed to assure lifetime tightness with minimum heat loss. Pressure firing permits the elimination of an induced draft fan with its attendant operating and maintenance costs.

TANGENT FURNACE TUBES. The VU-55's furnace tube arrangement provides complete heat-absorbing, water-cooled protection on all furnace walls. Furnace maintenance is minimized, since the design eliminates all exposed refractory surfaces.

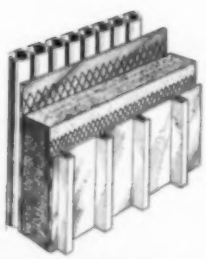
HIGH STEAM QUALITY. Equipped with a large (60-in.) steam drum, the VU-55 has generous water capacity and steam reservoir space. C-E drum internals assure high quality steam at all ratings.

STREAMLINED EXTERIOR. The overall appearance of the VU-55 reflects the efforts of its designers to achieve a completely unobstructed casing, while retaining adequate access wherever required and every facility for convenient operation. There are no outside downcomer tubes, and ducts from air heater to burners are beneath the furnace floor.

Your request for further information on the VU-55 Boiler will receive prompt attention



PLAN VIEW OF FURNACE showing arrangement of burners for tangential firing. Flame streams from the four burners impinge upon one another at high velocity, creating a turbulence unattainable by any other method of firing. The result is rapid and complete combustion. As the gases spiral upward, they sweep all furnace heating surfaces, assuring a high rate of heat absorption.



PERSPECTIVE OF FURNACE WALL. Construction consists of tangent tubes backed up successively by welded steel panels, 4 inches of high quality insulating material and an outer steel casing formed as shown to provide adequately for expansion and assure ample strength. Low heat loss and the tightness required for pressure firing are assured by this welded, double-wall construction.

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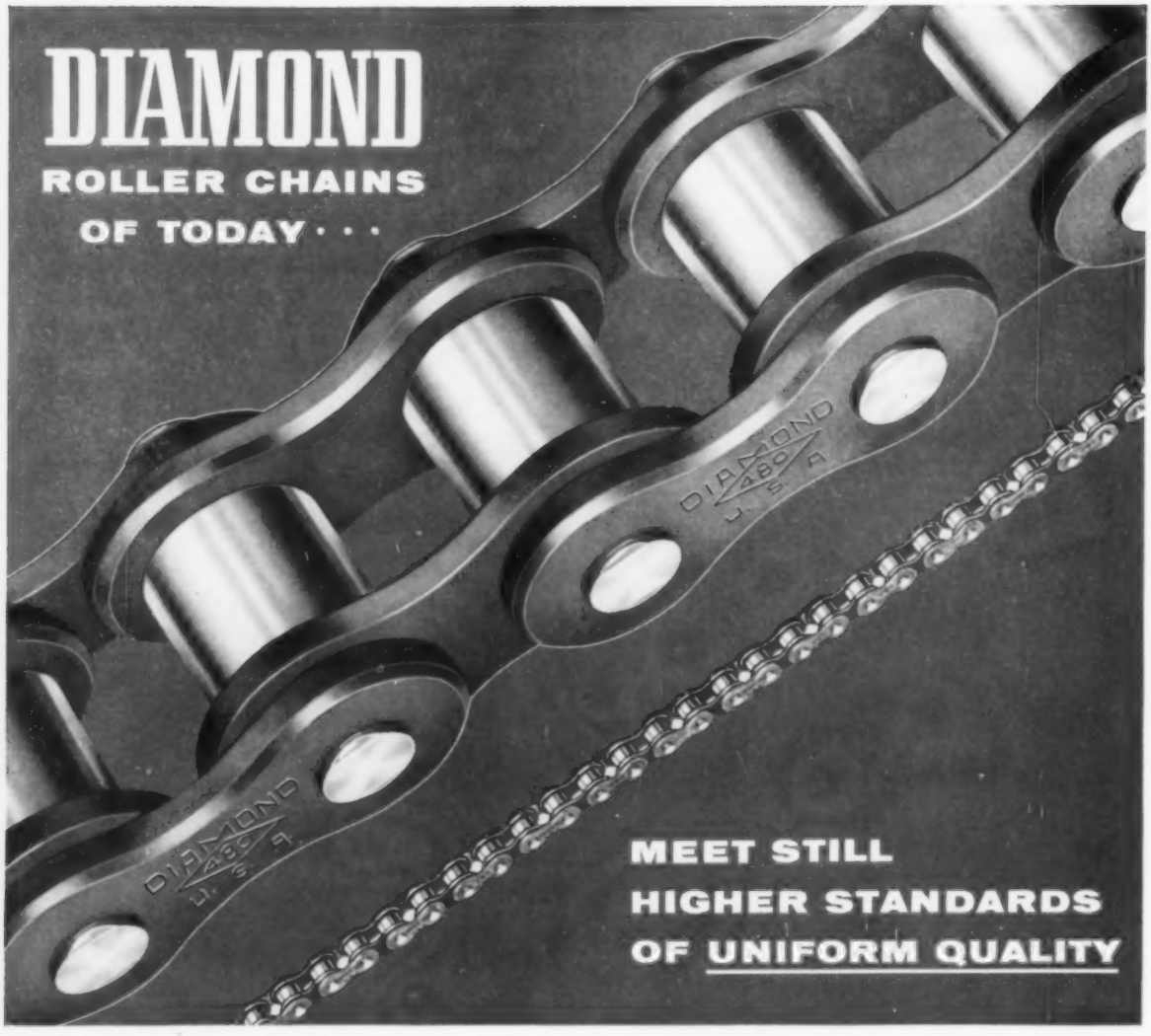

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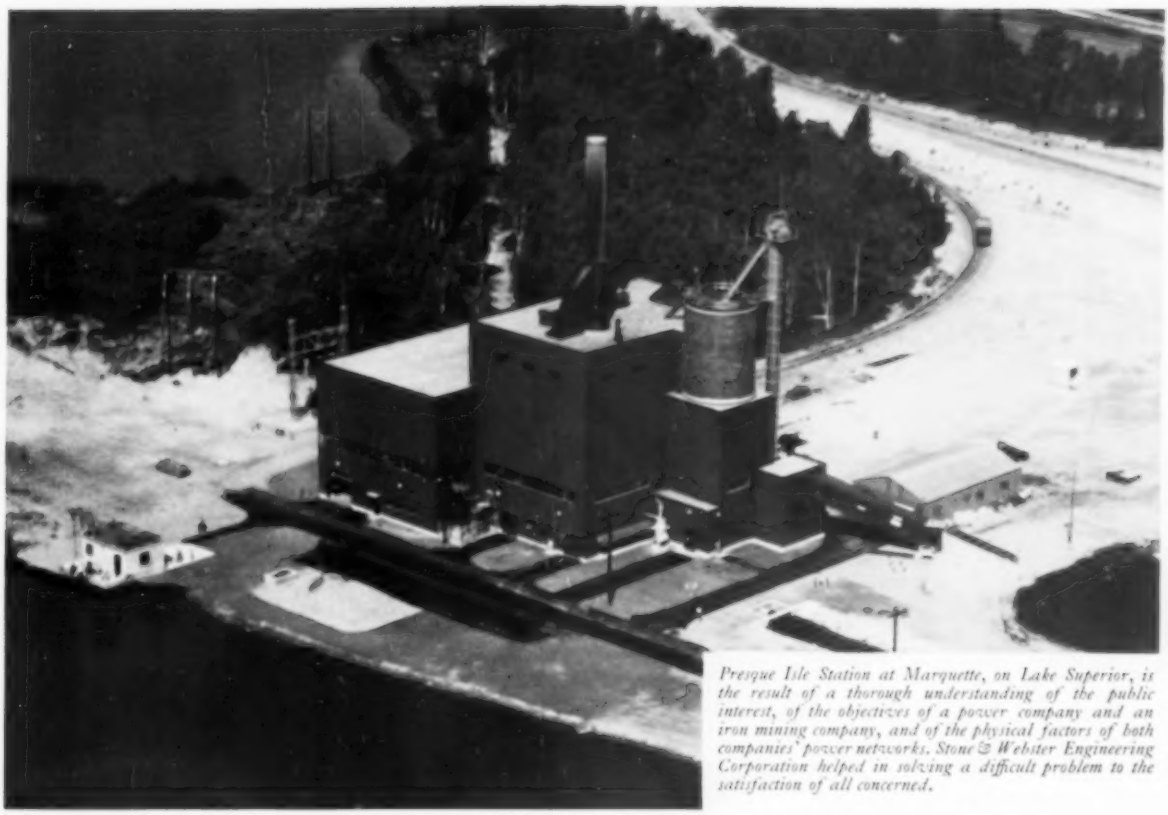

Presque Isle Station at Marquette, on Lake Superior, is the result of a thorough understanding of the public interest, of the objectives of a power company and an iron mining company, and of the physical factors of both companies' power networks. Stone & Webster Engineering Corporation helped in solving a difficult problem to the satisfaction of all concerned.

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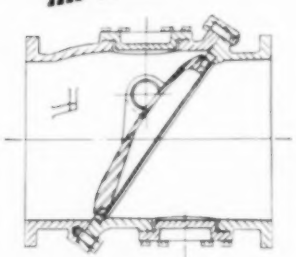

This specially designed "airfoil" disc balances perfectly in open position. The fluid holds the disc tightly against its stops without flutter. The body of the valve is larger around the disc, so the net valve area is at least as much as the pipe area to assure low flow resistance.

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TIMELY COMMENTS

SOUTHERN POWER AND INDUSTRY

Problems of Young Managers and Department Heads

RAPID INDUSTRIAL expansion and the relative scarcity of experienced engineers is resulting in rapid advancement of young men to positions of high responsibility and trust.

These young men come to their new jobs with many advantages over their predecessors, and most phases of their work are being excellently handled. Colleges are doing a fair job of instilling engineering fundamentals, and the larger organizations are giving better plant training to new technical employees than in the past. Whatever may be lacking in production experience is compensated, to a considerable extent, by more complete job descriptions and procedure guides.

Disadvantages faced by the young engineer rapidly advanced to responsibility, are primarily concerned with lack of experience in working with others and in solving unusual operating and maintenance problems that are not "spelled out" in departmental procedure guides.

There is no substitute for experience when it becomes necessary to set things right after an equipment failure or production line pile-up. Full knowledge of the job at hand on the part of the young executive is not enough, because most of the actual work must be done by those under his direction — and usually the pace is so fast that close supervision of all elements is impossible.

Thus, sound personnel policies and procedures quickly become evident as the most important tools of the junior executive. He quickly finds that loyal, intelligent, energetic co-workers can provide the key to his success. That is exactly what his company management had in mind when he was advanced to his new position. Following certain guides and tests and observations, he was given the job primarily because it was believed he could "handle men."

But the term "handling men" is to a large extent a misnomer. By and large the men handle themselves — the young executive's job is to get them to handle themselves in a manner that will result as a credit for him, and as a profit for his company.

The job is not easy. He practically always takes over an existing experienced organization. Some of the men are much older than he, and many have had vast experience in their particular jobs. Furthermore, many are well known and highly respected by "old timers" now in top-management positions. Reports on his performance as new department head "get around fast."

Slow and easy does it — particularly in the first months of his stewardship. The department was most likely operating in a more or less satisfactory manner before he took it over. Few quick decisions and sudden changes are likely to prove essential.

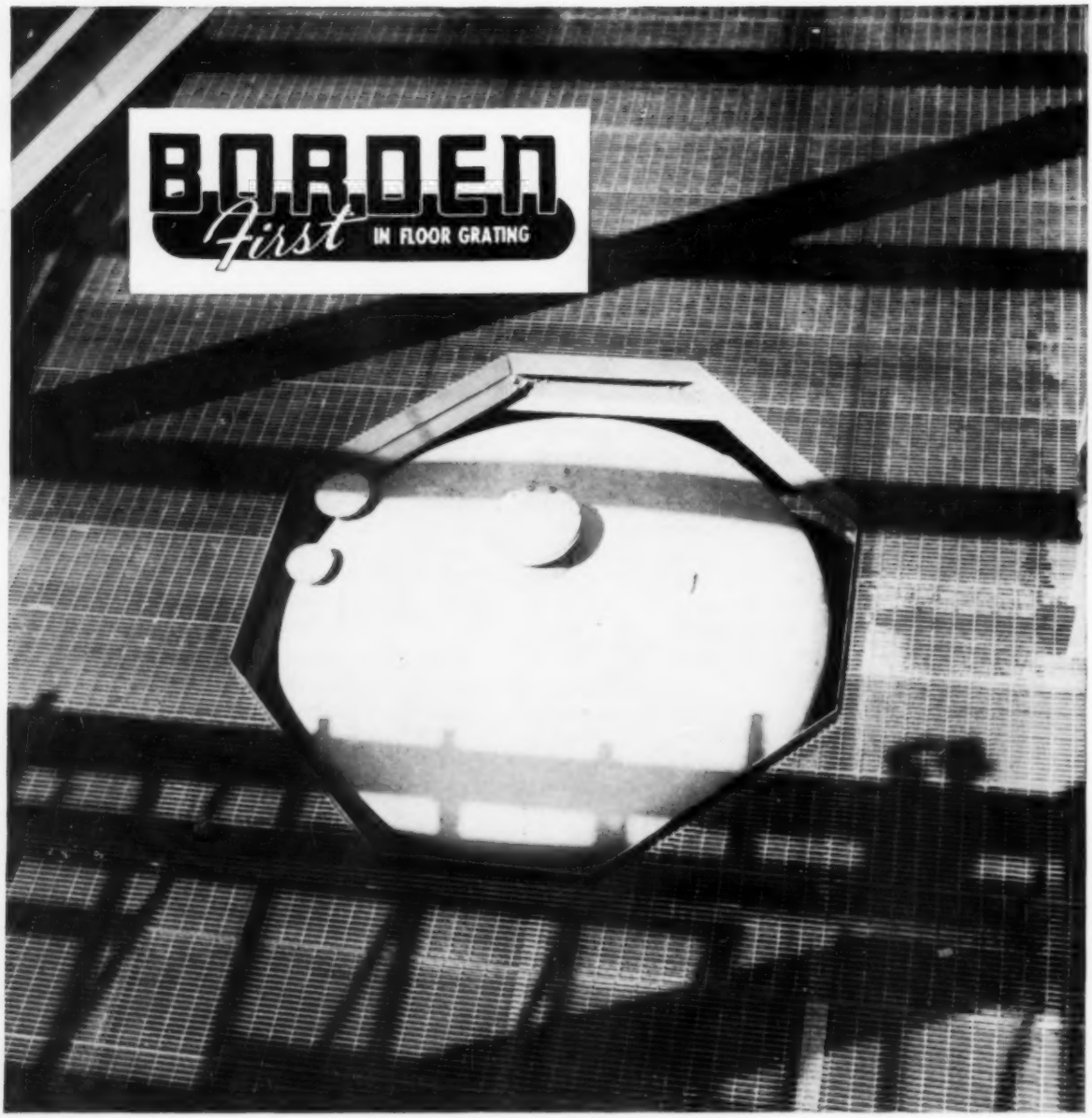
His first job is to evaluate individuals in his group and gain their confidence. True, the organization chart indicates he can fire malcontents and nonperformers. But where will he get trained replacements overnight?

A lot of discussing and getting acquainted is necessary. Those men he directs know a lot about their individual jobs, and they will share that knowledge with the new head if he asks their opinion more frequently than he "tells them how."

Even those employees "old enough to be his father" will readily cooperate with his efforts toward improvement if they are encouraged to help work out new procedures. Sometimes they can even become convinced that his new idea is actually their own, and if it is their own idea, **it will work.**

Failure to use the talent available among his own men is the greatest error anyone can make. Conferences, planning and discussion breed teamwork. The time required is not wasted; the men in a department know something about making improvements, and those worth keeping like to improve.

Somehow, through false reasoning in bygone years, "making quick decisions" got to be enumerated as an attribute of good management. Actually good executives have never employed the **Snap Judgment** technique. Too fast action on important matters not only breeds errors, but it makes even sound decisions difficult to implement. Even in emergencies, a brief "huddle" with the men is likely to result in better work and quicker restoration of service.



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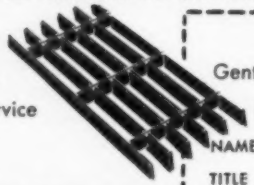

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INDUSTRY SPEAKS

Industrial Plant Construction — '56 Trends

INDUSTRIAL CONSTRUCTION in 1956 may exceed the "boom year" of 1955 by as much as 15 or 20%. The 1955 industrial trends supporting construction activity appear to be continuing and even intensifying.

1. Modernization and expansion of facilities with the object of more output and higher efficiencies.

2. **Expansion of capital available** for construction by virtue of mergers. Company mergers often come about so smaller or "poorer" companies in the economy may fulfill their business needs for expanded, modernized or diversified plant capacity.

3. **Product diversification moves,** in which the enterprise seeks to broaden its markets to avoid the dangers of over-dependence on one product line, or one industry, or one phase of a cycle such as up-and-down customer demands.

4. **Technological improvements in products, processes and equipment,** pouring out of the hundreds of research facilities completed in the last decade.

William Collins, President of **Walter Kidde Constructors, Inc.,** engineers and builders, noted the above trends in a recent report and commented as follows:

"Industry cannot afford obsolescence. Limited capacity and out-of-line costs must be corrected in the face of competition. For these reasons, we believe construction will continue at a high rate, whether under the heading of modernization or expansion."

Underlying these and the other industrial "build-up" trends is the fundamental expansion drive of the economy which appears to be "rolling under the impetus of increasing populations at home and expanding world markets, higher standards of living, and technological advances."

The Kidde president referred to what he calls "higher standards of business management" under which enterprises respond quickly and decisively to needs of the economy and market prospects. "There is more and more 'gambling' on futures but it is backed up by thorough investigations and data, to the point where companies are becoming accustomed to staking development money before the market is created or the technology is practically rounded out," he said.

"There has been, and will continue to be greater **emphasis placed on processes and equipment** and a de-emphasis on the structure which serves merely as a **housing** in the design and construction of modern industrial plants. Processes and equipment are the key to the increasing complexity of industrial products and the concomitant complexity of production techniques. As automation becomes a more dominant factor in the industrial plant, the building shell is being minimized in importance, and tailored to suit the needs of the equipment. This contrasts with the practice of past times — fitting the equipment into a **monumental** building.

"Just as in the case of commercial office buildings, **air conditioning** is winning a stronger foothold **in the industrial plant.** Fully air conditioned plant offices are already almost commonplace. The practice is now spreading to factory areas in the plant.

"New plants are being designed for a far **greater electrical load** than was previously the case. This is due to the increased use of more complex business machines, including tabulators, calculators, electrical typewriters and related equipment. Power for air conditioning is also a major source of power load.

"Increased attention is being paid to **plant layout.** Management is striving to obtain maximum output for each square foot of plant area. Up-dating plant layouts requires specialized industrial engineering know-how that few engineering or construction firms possess. We have obtained a substantial amount of business because of the reputation of our Industrial Engineering Department. In the case of one client, we were able to 'save' him 100,000 sq ft of plant space that he was able to utilize for a new product line. A new single-story plant that we are erecting for another client will have 50% less space than an existing multi-story plant that it will replace — but production capacity in the new facility will be 50% higher than in the old plant.

"Construction costs are expected to rise in 1956 primarily because of higher labor rates, but also because construction materials are in tight supply."

Time Saved in Large Louisiana Maintenance Shops

Automatic Pneumatic Tube System

The "right now" feature of this system reduces tendency to delay and pile-up records and requests . . . keeps materials moving and avoids making messengers of mechanics.

A message being placed in a carrier at the dispatcher's center. Note the circumferential metal rings on the carrier.

AN EXCELLENT example of how streamlined communications can raise the working efficiency of a maintenance organization is provided in the Central Mechanical Building of the Baton Rouge refinery of Esso Standard Oil Company. The building is served by a high capacity, fully automatic pneumatic tube communications system which was the first industrial system of this type to be installed in the United States.

The Baton Rouge installation, the world's third largest refinery, operates a maintenance service building in which parts of six craft divisions consisting of more than 300 workmen and 17 supervisors are employed. This building is 600 feet long, 235 feet wide and 40 feet high, containing three continuous parallel bays running the entire length of the building.

Messenger Method

Because of the size of the building and the distances between the work areas, record rooms and store rooms, Esso took steps to streamline communications as soon as the building went into operation.

Particular attention was paid to developing procedures for transmitting requisitions and delivering parts and materials between the 300 workmen and the stock room. Accordingly, a system was set up using a fork-lift truck as the link between the workmen and the stock area.

To obtain parts and materials from stock, the workmen in the various craft areas filled out requisitions. These requisitions were handed to the life truck operator who made the rounds of all the craft areas in the shop on a 15-minute schedule throughout the day. The truck operator stopped at the stock room and picked up the items ordered from the previous batch of requisitions and delivered them to the craft areas.

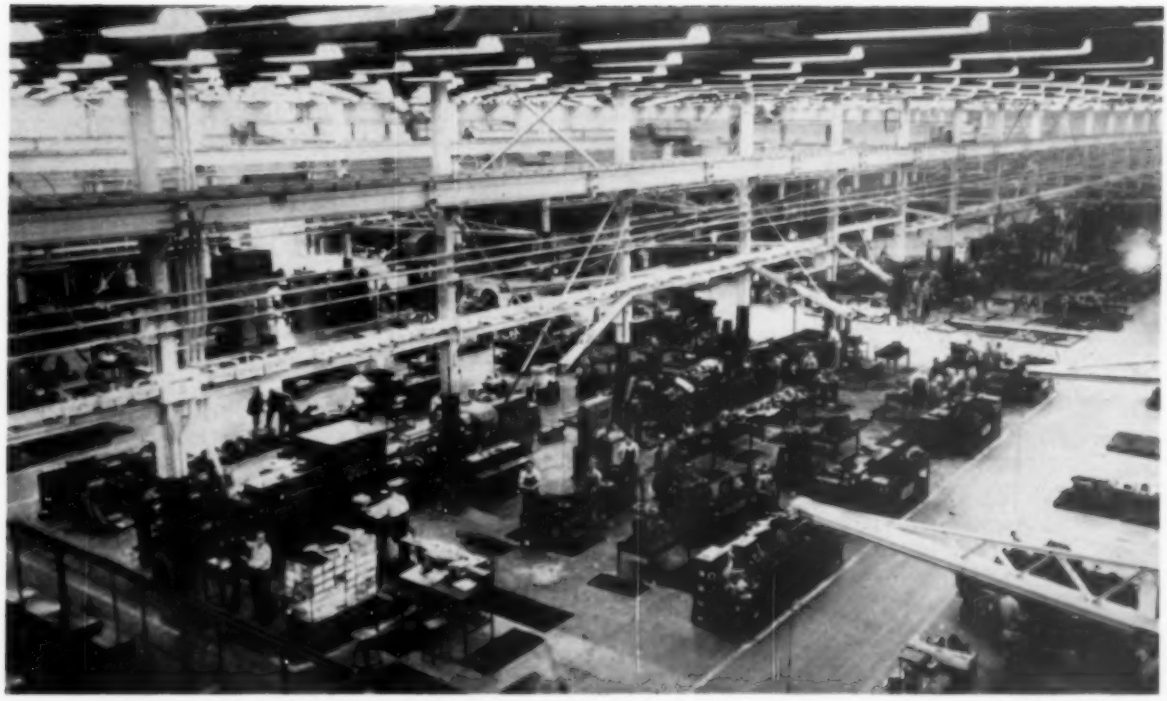
Although this routine cut down much unnecessary traffic between the craft areas and the store room, it nevertheless was an expensive way to transport correspondence

In all, an hour might elapse before the requested items were finally delivered. In many instances, the material man would take the requisitions to the stores order section himself to make certain there was no misunderstanding. This wasted valuable time for what were essentially errand-running missions.

Communications Improved

To eliminate this expensive operation and to speed up requisition handling, Esso looked into means of improving its communications procedures. They investigated the possibility of installing a pneumatic tube system. A cost analysis showed that such a tube system would pay.

About the time this analysis was completed, Lamson Corporation, announced development of automatic pneumatic tube system to supplement its line of manual airtube systems. A second analysis was made which showed that, be-



View of the machinists' section in Esso's central maintenance building. Man in shirt sleeves at left foreground stands at Airtube station that serves this section.

cause the automatic system needed no dispatcher, it could be justified over the manual system.

To understand why this is so, it is necessary to look into the operation of a pneumatic tube system. To get two-way communications between two points, it is usually necessary to use a pair of tubes, one for sending, the other for receiving the carriers.

In a large system set up to handle two-way communications between each of six to eight stations, it is usually more economical not to connect each station with every other station, but to channel all tube lines into a central dispatcher's desk. Thus, in a system with six stations, a total of 12 tube lines radiating from the central desk interconnects all six stations. Without the central desk, the six-station system would require 30 tube lines.

Automatic System

The automatic pneumatic tube system creates marked economies in installation and operation. Costs are lowered because the new system requires no central desk, eliminates the need for desk attendants and uses less tubing than does a conventional system to interconnect the many stations.

In essence, the automatic switch tube system is composed of two continuous lines for sending and receiving which encompass all the stations in a loop. Each station has both a short length of inlet and outlet by-pass tubing which connect the station to the main loops. Usually eight stations comprise a loop and, where additional stations are required, the system will have two or more loops, all intersecting at one common point.

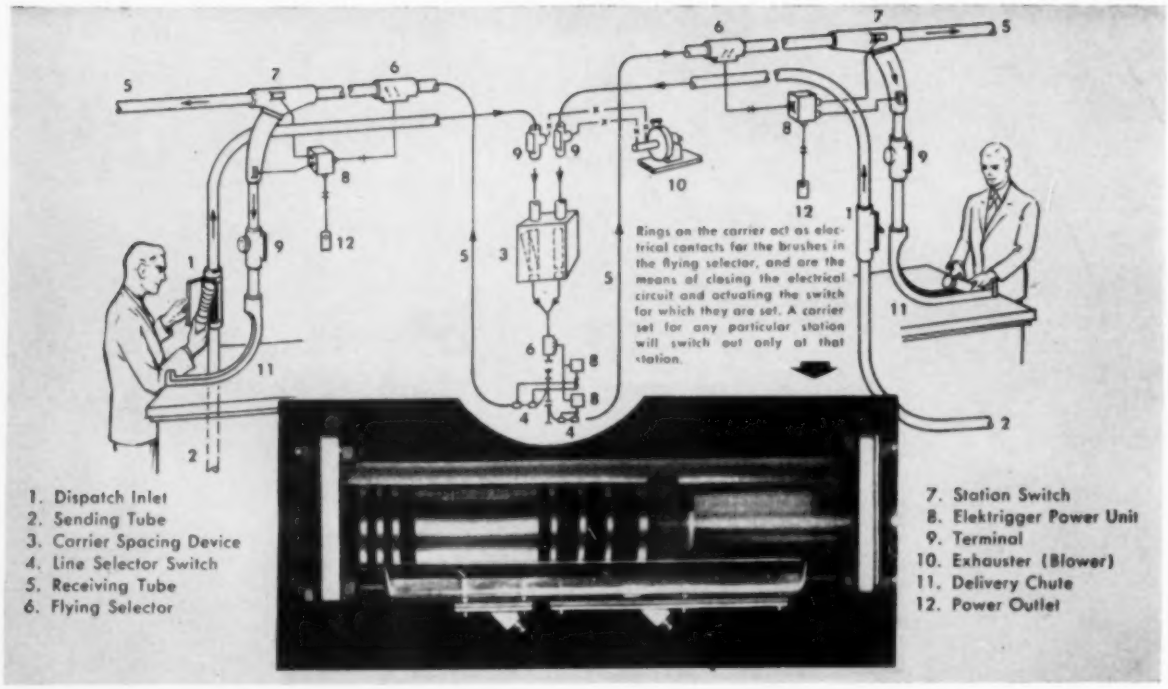
Brains of System

Once the proper settings are made on the carrier, it is delivered automatically to its destination. Along the outside circumference of each carrier is a set of three movable brass rings and seven equally-spaced fixed rings. Two of the movable rings are adjustable to indicating letters (which designate loops) and the other movable ring adjusts to indicating numbers (which designate particular stations within a given loop).

When the sender sets the rings to a particular number and letter, the rings become electrically connected to two of the fixed brass rings by the alignment of metal contacts inside the tube. As a result, each coded setting creates a distinctive relationship between the fixed brass rings. This relationship "tells" the various selectors in the system how to route the carrier.

When the carrier is placed in the dispatch inlet, it travels around the loop until it reaches a spacing device that automatically intercepts the carrier and holds it for 10 seconds before releasing it. This device is one of the brain of the system, since by intercepting every carrier it prevents two carriers from arriving at the same point in the system simultaneously and thereby eliminates the possibility of jams.

After the carrier is released from the spacing device, it moves through a "flying selector" which, in the case of multiple loop system, switches the carrier to the proper loop. The selector contains pairs of feelers, each pair having a distinctive spacing. The switch is


Rings on the carrier act as electrical contacts for the brushes in the flying selector, and are the means of closing the electrical circuit and actuating the switch for which they are set. A carrier set for any particular station will switch out only at that station.
1. Dispatch Inlet
2. Sending Tube
3. Carrier Spacing Device
4. Line Selector Switch
5. Receiving Tube
6. Flying Selector
7. Station Switch
8. Elektrigger Power Unit
9. Terminal
10. Exhauster (Blower)
11. Delivery Chute
12. Power Outlet

Schematic drawing of the major elements in the automatic Airtube system.

energized as the carrier passes under the pair of feelers having the same spacing as the pair of brass rings which were connected by the dialing.

The carrier then proceeds along the loop, coming in contact with a succession of feelers, each set being located about 15 feet ahead of the by-pass delivery line leading to the individual stations. When the carrier arrives at the particular set of feelers whose spacing corresponds to the spacing of the connected rings on the carrier, an electric circuit is completed, which trips a deflector in the line ahead of the carrier. The deflector routes the carrier into the receiving line of the station selected.

The carrier drops by gravity into a delivery chute, tripping a circuit breaker as it passes. This circuit breaker deenergizes the deflector solenoid and permits subsequent carriers destined for other stations to pass that station.

System at Esso

One of the operating advantages of this automatic system is that all the electric controls are local at each station. Therefore, in the event of electrical failure, the difficulty can be located quickly.

The Lamson automatic switch tube system at Esso consists of two interconnecting loops. One loop contains six stations: the dispatcher's office; machinists' section; tube bundle and safety value section; electricians' section; boilermakers' section; and the pipefitters' section. The second loop contains two stations: the equipment record room and the stores order office, the latter being the busiest station in the whole system. The second loop can accommodate additional stations when needed.

The running time for a carrier traversing the longest possible distance in the system is approximately 40 seconds.

With the automatic switch tube system, the efficiency of Esso's maintenance operations has increased in many significant respects. The average delivery time for paperwork, requisitions, reports and blueprints has been reduced from 30-45 minutes to approximately 30 seconds. Since the system handles about 100 communications an hour, taking an average for the entire day (several times that number during peak hours in the morning), the total time saved by eliminating walking trips through the building and delays in the transmission and receipt of paperwork and blueprints amounts to several hundred hours.

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FOR SPECIAL REQUESTS — USE CARD ON PAGE 17

North Carolina Foundry Uses Visual Planning

Effective Layout in New Plant

RECENTLY, Cocker Machine and Foundry Co., was faced with the problem of arranging tools, machinery, and manufactured products in a 40,000 sq ft building to provide for expansion of production facilities at Ranlo, N. C. This company designs and builds industrial machinery. Machine tools, warehouse, erecting department, shipping, and office space were to be housed in the new structure.

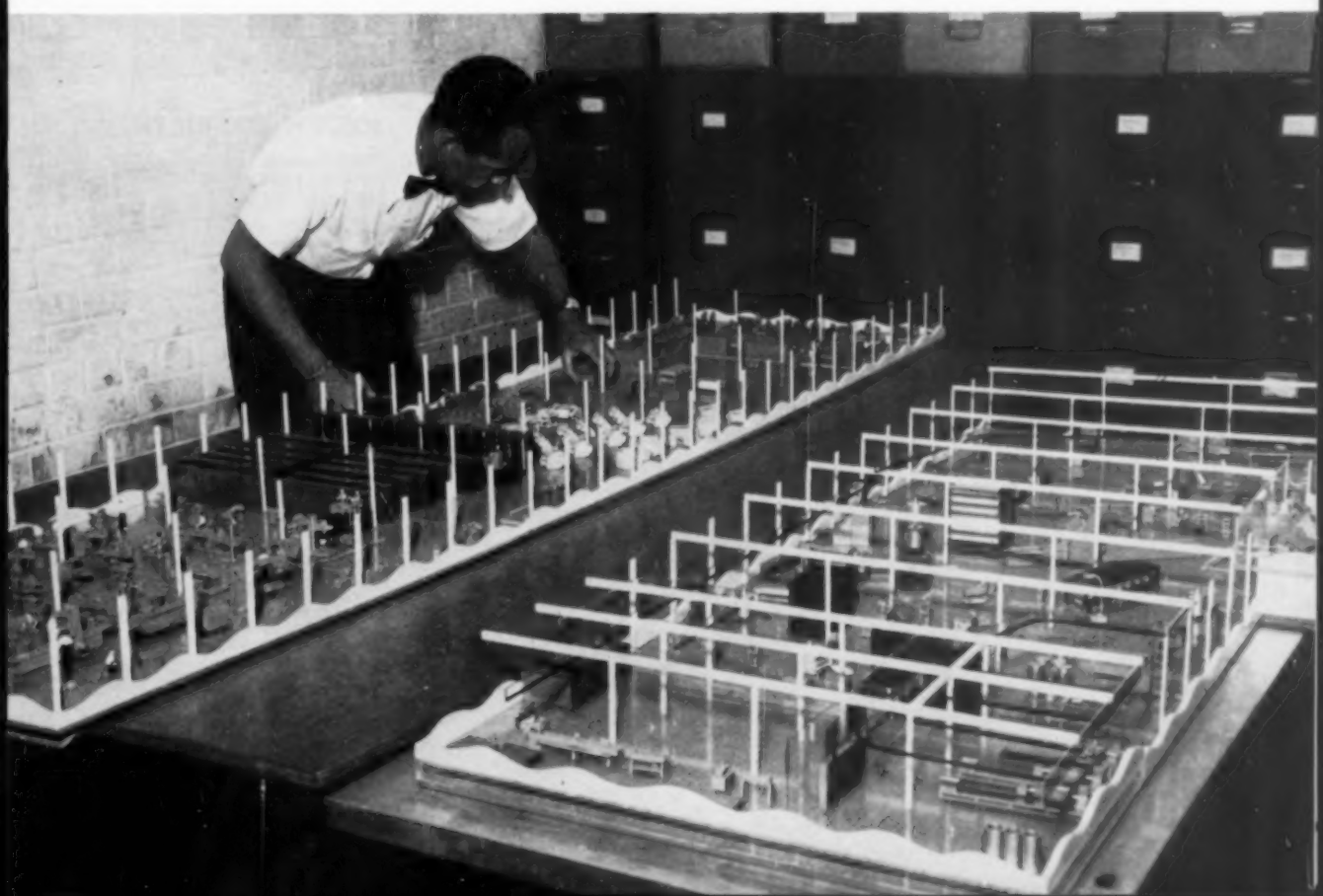
As part of a long range expansion program, a three dimensional plant model was secured from the Visual Planning Equipment Co., Oakmont, Pa. This firm supplied accurate scale models of plant equipment and machinery, and the models are used to arrange plant facilities for most efficient use of floor space, machines, personnel, and to allow for future expansion plans and changes.

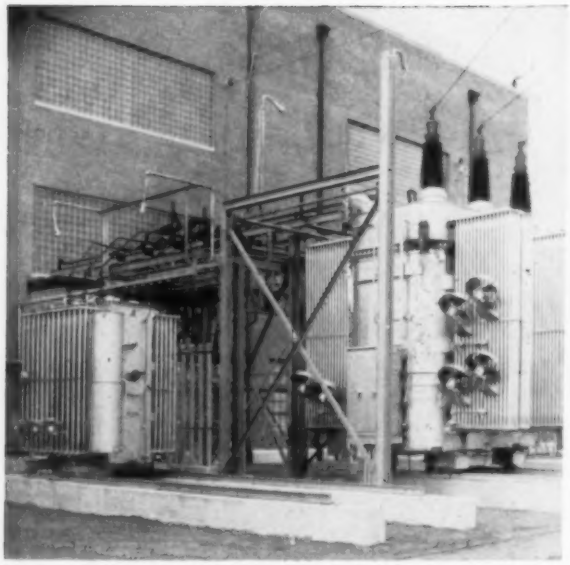
By more accurate placement and arrangement of machine tools and machines in production, this visual planning aid has saved considerable time, effort, and money. The models helped save approximately 5,000 sq ft of floor space. The cost of this area was saved and more than paid for the cost of the visual planning service, according to management at Cocker Machine and Foundry Co.

The models have helped overall efficiency of operation because all machine tools required for the next five years (although not all purchased yet) have been located in the plant layout. Adequate space has been allowed for future installation of new machines and tools and for replacement of several smaller machines by one larger machine in some instances.

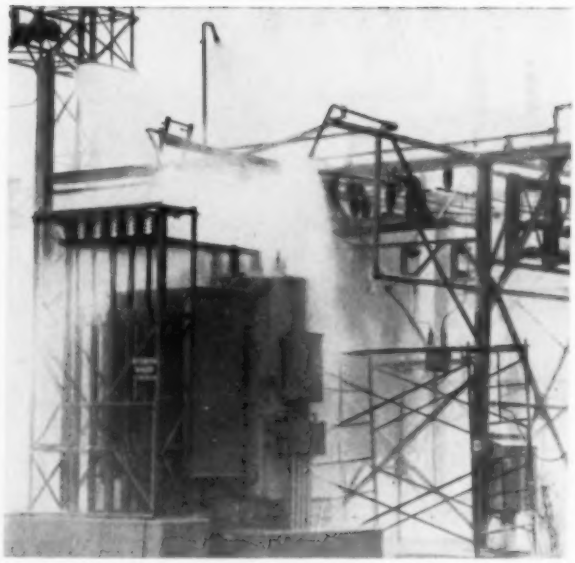
The models are used on a gridded Lucite platform which serves as the floor area. All models in this instance are made on a scale of one fourth inch equals one foot. Each model comes with a template of the base.

A gridded sheet of plastic is supplied with the Lucite board, and the templates are fastened to the plastic sheet which matches the base of the Lucite floor model. This thin sheet is used to reproduce the layout on blue prints. A double tape with adhesive on both sides is used to fasten the models to the Lucite board. Positions of the models may be easily changed (see accompanying illustration).





Nozzle arrangement for Transformers



Fog Discharge over transformers

Modern Plants Present More Serious Hazards

Fire Protection System Modernized

Gulf Power Company, pioneer in the field, installs up-to-date fire protection in existing Florida generating plant.

By

JOSEPH ROUBICEK

Chief Engineer
Associated Engineers
Birmingham, Ala.

and

W. M. REAST

Superintendent of Production
Gulf Power Company
Pensacola, Florida

REALIZATION that modern generating plants present far more serious fire hazards than plants built 15 or 20 years ago, prompted Gulf Power Company to undertake in 1953 the pioneer installation of a completely integrated system of fire protection at their new River Junction Station, now called Scholz Steam Plant. This installation which represented a distinct departure from conventional methods of fire protection, was incorporated in the original design of the plant by Southern Services, Inc. For a full description of this installation see *Fire Protection in Florida Utility* by A. Mergenthaler, Southern Power & Industry July 1954.

Having taken this initial step, the management of Gulf Power Company decided to consider providing comparable fire protection in their existing Crist Steam Plant which serves the rapidly growing territory at and around Pensacola, Florida. As a result of a thorough survey of this plant, it was decided to provide a comprehensive system of engineered fire protection for this vital generating point of the Gulf Power Company's system.

The experience gained by the River Junction installation and the advance in the art brought about by subsequent original plant designs were combined by Southern Services, Inc., to provide a scheme of fire protection ideally adapted to the existing conditions and operating needs of the plant.

This plant, the first unit of which was placed in operation in 1944 and the last unit of which was completed in 1955, has an installed nameplate capacity of 75,000 kw. Gas-fired boilers provide steam at 850 psi, 900 F total temperature for two 22,500 kw turbines and one 30,000 kw turbine, driving hydrogen - cooled generators, two of 25,000 kva, 90% pf and one of 35,294 kva, 85% pf rating. Power is generated at 12.0 and 12.5 kv

and stepped up to 110 kv in three-phase transformers.

Fire hazards in modern steam plants comprise indoor as well as outdoor locations. The biggest indoor fire hazard is oil in close proximity to equipment which operates at temperatures well above the flash point of the oil. The main outdoor hazards are the transformers containing large quantities of insulating oil, which, under the impact of ever-increasing short circuit currents and possible bushing flash-overs will readily burst into flame.

Specifically therefore, the main fire hazards at Crist Steam Plant are represented by turbine oil reservoirs, turbine oil auxiliaries including hydrogen seal oil units, turbine oil storage tank and the oil-filled power and station service transformers.

Description of System

An analysis of these hazards disclosed that manually operated water fog systems would provide the most desirable means of fire protection. As a result, the comprehensive fire protection system designed for this plant essentially consists of:

(a) A reliable water supply provided by a 150,000 gallon storage tank, located at ground level and supplied from an electric motor driven deep well pump.

(b) Pressure boosting facilities, consisting of one gasoline engine driven and one electric motor driven pump, each pump having a nominal rating of 750 GPM at 150 PSI.

(c) A fire main for the switchyard, the boiler and turbine rooms.

(d) Individual water fog systems connected to the fire main and operated from manual control station located at places remote from the hazard zones.

(e) Hose connections for hand lines, indoors as well as outdoors, supplied by the fire main.

Pumps and Piping

The booster pumps are located in a separate pump house adjacent to the storage tank. They are connected in parallel and operate under a positive suction head provided by the storage tank water level. A pressure relief valve, capable of by-passing the pump output is provided in the pump discharge line so as to prevent an undue pressure rise upon a sudden drop in load.

The pump discharge header connects to the fire main which is cast iron, bell and spigot, class 250 for the underground portions and Schedule 40 galvanized steel for the indoor runs. Galvanized malleable iron fittings are used with steel pipe, except for large valve manifolds which are of welded design.

Turbine Oil Reservoirs

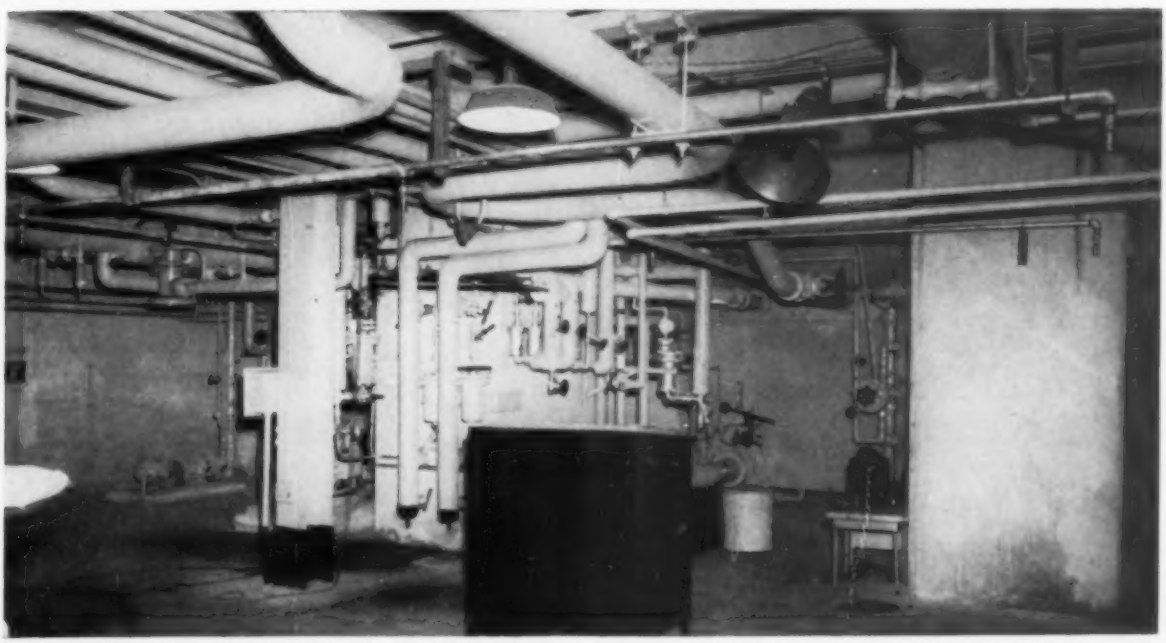
Protection of Unit No. 1 and Unit No. 2 reservoirs which are suspended from the turbine room floor steel, presented a problem since the reservoirs themselves, being virtually surrounded on all sides by pipes of every description, do not lend themselves to direct fog application from fixed fog system.

Hence, the existing CO_2 system which protects the enclosed station service switchgear was extended to a special CO_2 nozzle at each reservoir to flood the space above the oil level with CO_2 in case of fire.

On the other hand, the floor slab below the reservoirs, where in case of rupture, burning oil would collect and possibly involve adjacent units, is protected by a fog smothering system.

The function of this system is two-fold. First, it will control fire at the base floor level and second, by removing heat and flame below, it will permit hand fog lines to be brought into action on the burning

Fog System for area below turbine oil reservoir



oil spill or drip at the reservoir proper.

Unit No. 3 reservoir, being free standing at an intermediate level below the turbine room floor, has similar protection for the base slab area, but, in addition utilizes a fog curtain around the reservoir itself. This screening system places a curtain of fog across the top and along the sides of the reservoir, controlling fire and effectively isolating the unit in an emergency.

A particularly interesting and novel feature of the layout is the approach protection for the turbine front ends. Aside from the fixed protection below the turbine room floor, the approach to the front end of each turbine, at the turbine room floor, is protected by a fixed fog discharge which will permit operators with hand lines to approach the critical front end of the turbine with safety.

A large capacity fog nozzle is mounted at an elevation approx. 12 ft above the turbine room floor, angled downward so as to cover an area about 15 ft in diameter immediately in front of the turbine outboard bearing. A fire at this extremely critical point which has to be handled by hand lines can then be approached under the cover of the fog umbrella produced by the overhead nozzle. This feature, being first used at Crist Steam Plant, is now being provided for all plants of the Southern Company's system.

Oil Conditioning Units

The oil conditioning units which filter the turbine lubricating oil and the areas immediately surrounding them are protected by fog smothering systems utilizing fog nozzles mounted above the units.

Hydrogen Seal Oil Units

Similar systems are provided for each hydrogen detraining unit. Also connected to each of these systems is a fog discharge over the hydrogen cylinders so as to keep them cool in the event of a fire in the adjacent detraining unit.

Outdoor Transformers

The three-phase power and station service transformers are protected by individual fog systems, using overhead mounted deluge type nozzles which eliminate the unsightly and cumbersome "bird cage" pipe structure used in the past.

The supply lines to the nozzle systems are carried from the turbine room along the steel structure which supports the generator leads, and the distributing lines to the nozzles themselves are supported by the steel of the bus structure.

Nominal water flow for the fog discharge over the power transformers is 400 gpm, while the smaller station service transformers require 200 gpm each.

Control Stations

The fog systems for the turbine oil reservoirs and oil auxiliaries of each unit are controlled from a valved manifold in the turbine room. These manifolds are at normal operating height and are located centrally with respect to each generating unit.

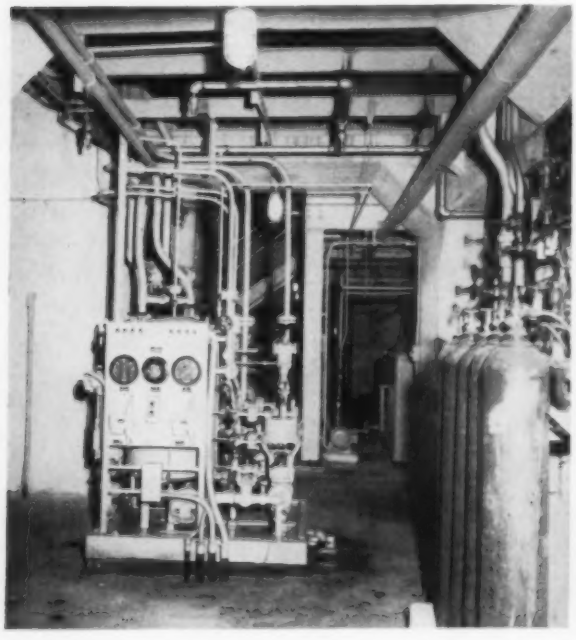
The transformer control stations are similarly arranged, using overhead manifolds with extension stem gate valves for the control lines.

Large strainers with blow-off connections protect the individual manifolds. These strainers are additional to the integral strainers which form part of each fog nozzle.

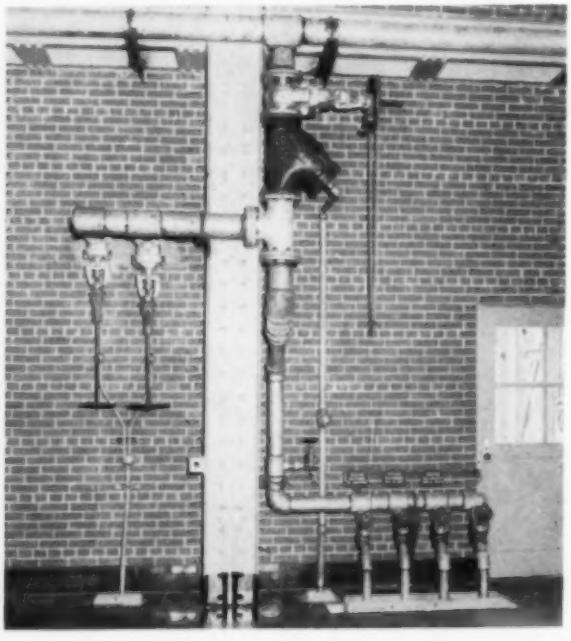
The fog discharge for the turbine front end approach is taken directly from the turbine room fire main,

(*Continued on page* 114)

Fog System for hydrogen seal oil unit



Typical Fog System Control Station



AIEE Textile Sub-Committee at Conference on Electrical Equipment

First Row: R. B. Flowers, Atlanta, Ga.; **C. E. Robinson,** Cleveland, O.; **R. R. Prechter,** Schenectady, N. Y.; **A. W. Frankenfield,** Wilmington, Del.; **R. H. Clark,** Cleveland, O.; and **Howard E. Strock,** Charlotte, N. C.

Second Row: G. C. Gaskin, Greenville, S. C.; **C. F. Hedlund,** Boston, Mass.; **H. R. Pancoast,** High Point, N. C.; **R. C. Savage,** Providence, R. I.; **R. S. White,** Providence, R. I.; **J. A. Mason,** Northboro, Mass.; and **C. R. Moore,** Philadelphia, Pa.

Third Row: G. B. Hoadley, North Carolina State College; **J. M. Fjeld,** Greensboro, N. C.; **J. T. Meador,** Charlotte, N. C.; **Richard C. Quick,** Charlotte, N. C.; **Victor F. Sepavich,** Worcester, Mass.; **Swaffield Cowan,** Charlotte, N. C.; **M. S. Carlson,** Philadelphia, Penn.; and **A. T. Bacheler,** Buffalo, N. Y.

AIEE Conference on Electrical Equipment

North Carolina State College

By JOHN F. LEE

Professor of Mechanical Engineering
North Carolina State College

PROBLEMS of common concern to industrialists and engineers received study at the Conference on Electrical Equipment for the Textile Industry which met at North Carolina State College on November 3 and 4.

The 242 delegates came from ten states to sessions of the meeting which were held in Riddick Engineering Laboratories Building at the College's School of Engineering.

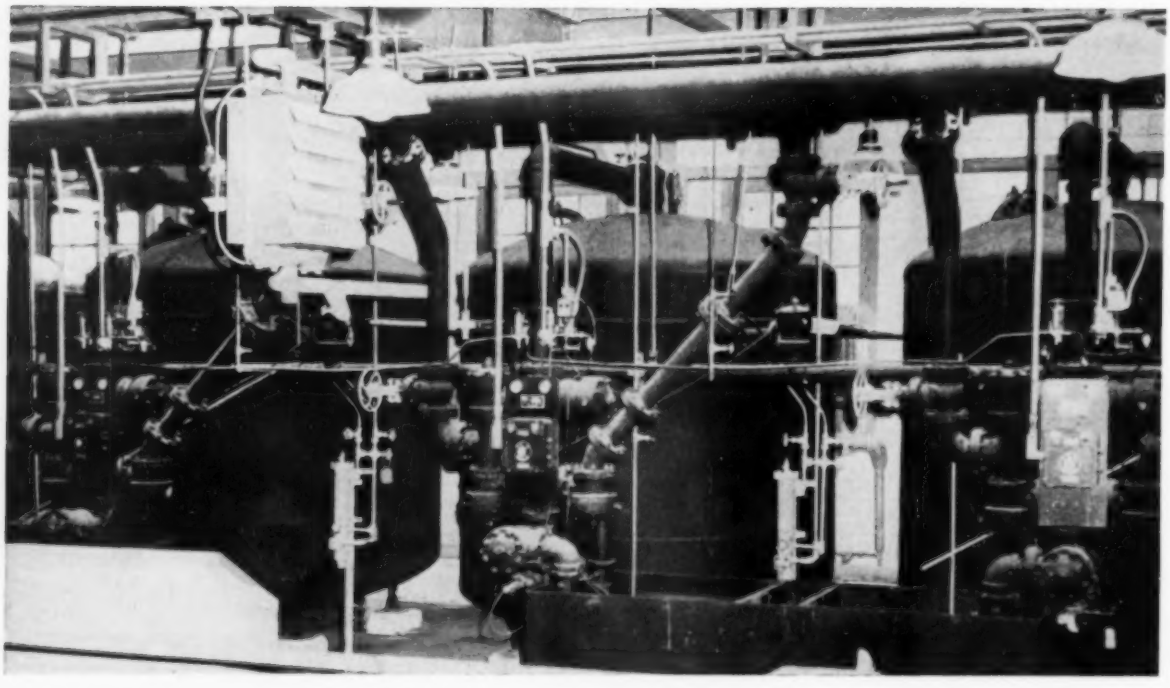
Discussion was centered on the "Proposed Recommended Practices for Electrical Installation on Textile Machinery" which, when adopted, will set up a suggested procedure for the installation of electrical equipment. R. H. Clark, chief electrical engineer of Warner-Swasey Company, Cleveland, Ohio, and a member of the AIEE Textile Sub-Committee, presented a summary of the proposal. In explaining the AIEE's purpose in drawing up the recommended practices, he stated, "We firmly believe that the health of the industry will be enhanced by the development of modern practices for the electrification of textile machinery, and the installation in your mills."

Victor F. Sepavich of Crompton and Knowles Loom Works, Worcester, Mass., and chairman of the Textile Sub-Committee, and Swaffield Cowan, engineer for Factory Insurance Association, Charlotte, N. C., and a member of the Textile Sub-Committee, also commented on the Recommended Practices.

Emphasizing that the proposal is not yet in its final form, they urged delegates to give suggestions and corrections which will help the Sub-Committee prepare its final draft. The AIEE Standards Committee must give its approval also to the proposal before it can be officially released for publication.

A panel discussion on "Electrical Problems and Their Remedies" brought the conference to a close. Participating in the panel were Dr. G. B. Hoadley, head of the Department of Electrical Engineering at State College and conference speakers. These included R. H. Clark, V. F. Sepavich, and Swaffield Cowan as well as John deB.

(*Continued on page* 112)



Plant view of four automatically controlled sodium zeolite softeners.

CLOCKING WATER TREATMENT

Boiler Make-up Water Treatment Is Automatic at West Virginia Plant

By GEORGE ZELLER, JR.
Instrument Supervisor
Westvaco
South Charleston, West Virginia

BOILER WATER treatment equipment at South Charleston, West Virginia has proved the practicality of automatic control. Built by Westvaco Chlor-Alkali Division of Food Machinery and Chemical Corp., the modern 1500 gpm plant has resulted in better boiler operation and improved water quality together with a general reduction in over-all operating costs, through the use of automatic control equipment.

The decision to incorporate the automatic control units was prompted by dissatisfaction with equipment that requires constant manual adjustments of valves and counterweights on flow controllers and close coupling of meters and controllers by mechanical linkages.

The pneumatic and electric control instruments, manufactured by Minneapolis-Honeywell's Industrial Division, not only permit automatic operation of the entire plant but also facilitate supervision of all units from one central location.

At Westvaco, nine boilers generate 750,000 pounds of steam per hour at 420 psi, 700 F. They require make-up water at the rate of approximately 1,000 gpm. Consequently, treatment facilities have a maximum design capacity of 1,500 gpm. Raw river water is chemically treated with ferric sulphate. The resulting floc is settled in Accelators[1] from which the water flows through Anthrafilt[2] gravity feed filters to a clear well. As water is required by the boilers, it is pumped from the clear well through sodium zeolite softeners to the heat exchangers.

Feeds in Proportion

The first problem facing the instrument department was the proper treatment of the raw water with ferric sulphate and lime. Feeding rates of these two chemicals have to be in direct proportion to the incoming water flow rate and as nearly continuous as possible. Omega[3] loss-in-weight, Type 2 feeders are used to feed the chemicals in the dry solid state. Proper pacing of the feeders is accomplished by an electric flow meter (Brown) in combination with ATC[4] timers.

An electric flow meter body

measures the raw water flow through an orifice and electrically transmits the measurements to a circular chart recorder with integration. A relay is tied in parallel with the electronic integrator circuit to enable the use of the raw water flow to control both the chemical feeding rates and the sludge blow down on the Accelators. Thus, the same electric pulses that go to the counter motor of the integrator on the recorder are also relayed to timers for the feeder motors and sludge blow down valves.

The timer assembly for chemical treatment consists of an ATC Series 4100, repeat-cycle timer and a Type 2871 "Cycle-Progress" timer. The meter integrates six times per minute, and the duration of the pulse for each integration is directly proportional to the flow.

The Series 4100 timer is tied in parallel with the integrator, therefore its motor runs as long as the electric pulse lasts for each integration. In effect then the timer also totalizes flow. The timer is adjusted so that its motor makes one complete revolution for every 1,000 gallons of total flow and trips a starting switch for the Type 2871 timer. The latter timer programs chemical feeds for durations from 0 to 1 minute as required by a manual setting. Amounts of chemicals fed during the timed period are adjusted by means of rate setters furnished with the Omega feeders.

Sludge Blow Down

The sludge blow down for the Accelators is accomplished by using the ATC timer assembly identical to that described above for chemical treatment. Also tied in parallel with the Brown integrator for raw water flow, this Series 4100 timer, however, has a cycle equal to a total flow of 10,000 gallons. At a maximum flow rate of 1,000 gpm, sludge is blown down every 10 minutes. After every 10,000 gallons of water has been treated, the 4100 timer trips a starting switch for the Type 2871 timer. The latter, in turn, opens the pneumatically operated blow down valve.

The length of time that the 2871 timer permits the blow down valve to remain open can be adjusted from 0 to 1 minute. As in all settling tanks where the water must pass up through a sludge blanket, optimum treatment requires that the sludge blanket be maintained at a certain level. If the blanket is too high, the sludge will be carried over with the water. On the other hand, if the sludge blanket is too low, it will not be effective in filtering out fine, suspended matter. Because the rate of sludge blow down will affect the level of the sludge blanket, the 2871 timer must be adjusted to control the sludge blanket at the desired level.

Pneumatic Controls

The clear overflow from the Accelators is polished by four Anthrafilt gravity feed filters operated in parallel. Flow rates through the filters are automatically controlled by a pneumatic receiver controller interconnected with a recording level controller for the clear well. Loss of head on each filter is measured by a differential pressure transmitter and indicated by a pneumatic receiver mounted on the

(*Continued on page* 114)

Instrument panelboard located in the boiler room. Five Brown circular chart recorders with electronic integrators and ATC timers control the flow through the make-up water treatment plant.

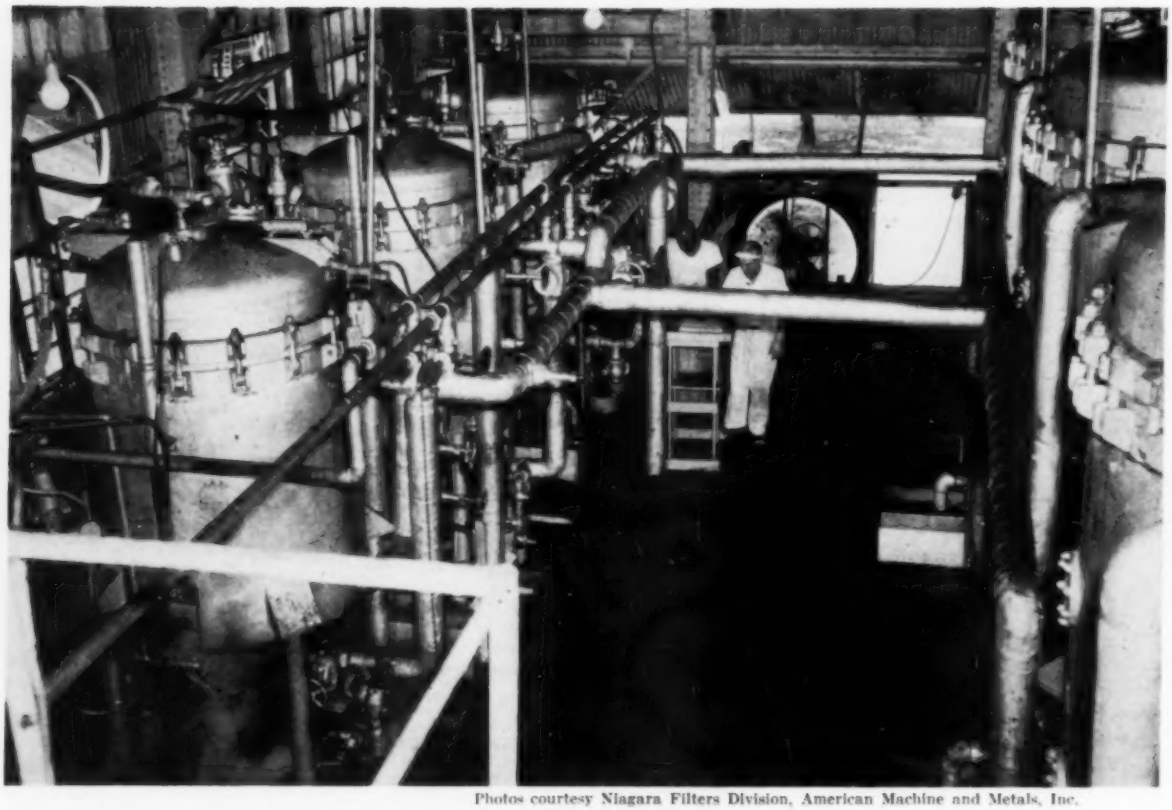
1—Trademark of Infilco, Inc., Tucson, Ariz.

2—Trademark of Anthracite Equipment Corporation, Wilkes-Barre, Pa.

3—Trademark of B-I-F Industries, Providence 1, R. I.

4—Trademark of Automatic Temperature Control Company, Inc., Philadelphia, Pa.

5—Product of Continental Equipment Co., Corapolis, Pa.



Photos courtesy Niagara Filters Division, American Machine and Metals, Inc.

Three 520 square foot vertical cone bottom filters at left, used for secondary sugar cane liquors. At right, three 750 square foot of same type are used as primary filters on sugar cane liquors.

Louisiana Sugar Refinery Solves Problem

Pressure Leaf Filters Spur Production

REPLACING nine plate and frame filters with six vertical and one horizontal pressure leaf filters, helped Southdown Sugars, Inc., to solve a ticklish labor problem as well as cut operating costs and increase filtration efficiency at its Houma, Louisiana, sugar refinery, according to plant officials.

The company clarifies washed raw sugar syrup of 63 Bx at 200 F and at a ph of 7.6 - 7-8. Insoluble solids include mud, bagasse particles, gums, waxes and other impurities. These solids, which are discarded, are finely divided and slimy in physical structure. The refinery processes 150 gallons of raw sugar syrup and separates out 792 pounds of filter cake, per hour. Quality of "raws" and color are controlling factors in the filtration rate, and it is desired to get a filter cake with the least amount of moisture content possible.

For the entire filtration process, including primary and secondary filtration as well as trapping or sweetening off, the company previously used nine plate and frame filters; five had a filtration area of 750 square feet each, and four had a filtration area of 500 square feet each. It took a shift of seven men, four men and a foreman to drop the filters, and two men working below, to operate the filtration equipment.

Because of the inherent "open" design of plate and frame filters, working conditions around the filter station were extremely uncomfortable. The air was hot and steamy and men were annoyed by vapors escaping and blowing into their faces when the filters were opened. As a result, the company had a tough problem getting men to work at the station.

Pressure Leaf Filters

In an effort to improve working conditions around the filter station, the company first purchased

Close-up of horizontal Niagara filter, partially open, showing the carbon infusorial cake beginning to drop off.

a 500 square foot vertical pressure leaf filter. The pressure leaf gave filter improved service, so three additional units of the same type were purchased one year later, a 500 square foot, and two 750 square foot units. In the next few years, a 500 square foot and a 750 square foot filter were added — both of the vertical type. Later the company purchased a 500 square foot horizontal unit.

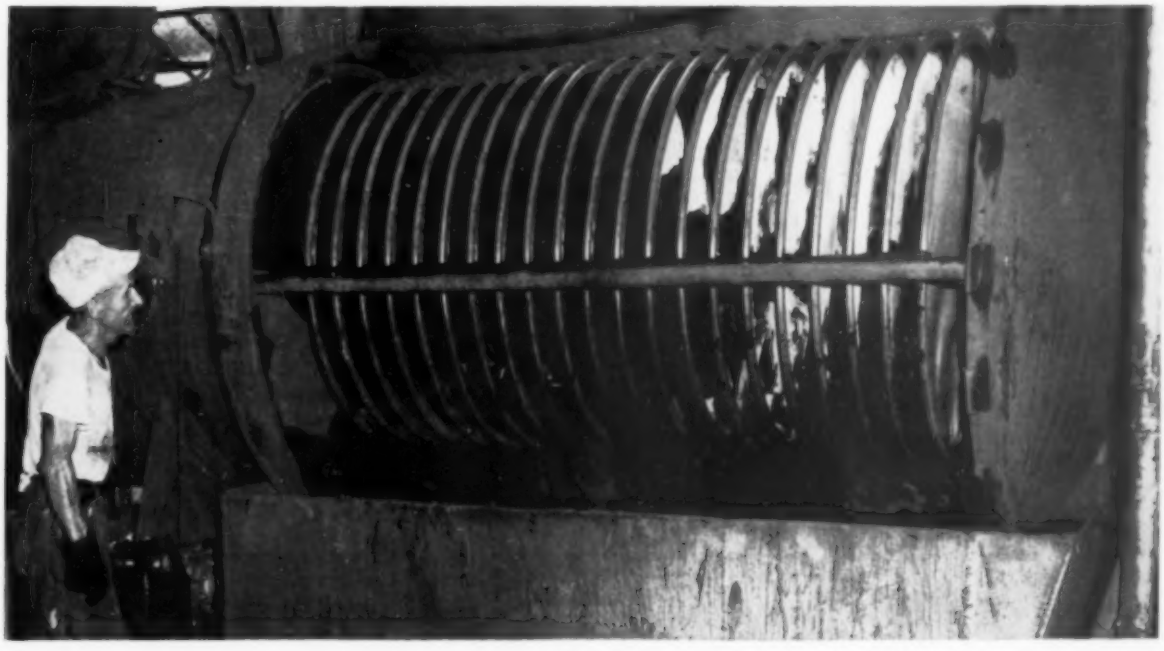
Currently, all plate and frames have been replaced with pressure leaf filters. The raw sugar liquors are filtered by the three 750's, and the second filtration step is done by the three 500's. The 500 square foot horizontal unit is used for "sweetening off."

The following are some of the benefits accrued to the company through the use of pressure leaf filters:

1. Manpower reduced from seven men to two men per shift.
2. Working conditions cool and comfortable because the filters are enclosed.
3. Cleaning operations are quicker and simpler, taking less than an hour as compared with laborious handling of the old plates, cleaning and replacing filter cloths, etc.
4. Saving in cost and maintenance due to elimination of filter cloths.
5. Superior filter operation — although the solids are finely divided and slimy, a good filter cake, which sloughs off easily and leaves a clean filter leaf surface, is obtained.

Company plans call for installation of three additional units of the same type, a 500 square foot horizontal and two 750 square foot vertical filters. This would increase refinery capacity from the current 650,000-750,000 lb/day to over a million pounds per 24-hour day.

This picture illustrates good filter operation and filtration technique. The filter cake is sloughing free of the filter leaves. The white, clean filter leaf surface exposed by the sloughed-off cake indicates that ample infusorial earth has been used.



Gear Type Flexible Couplings

By JOHN E. HYLER

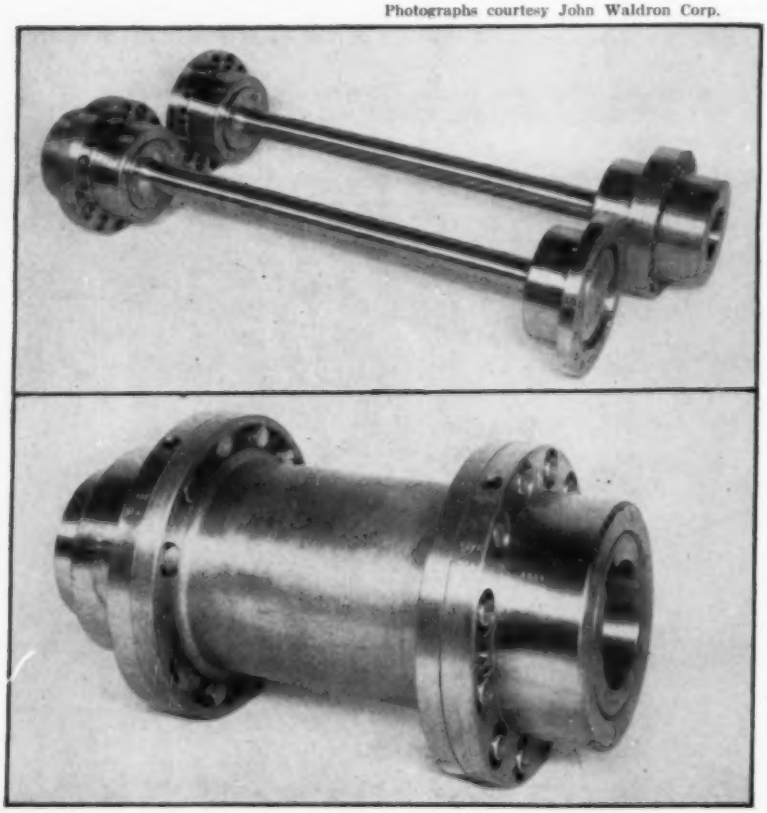
FLEXIBLE COUPLINGS incorporating gears have many different applications. Such a coupling makes use of two hubbed gears, the hubs of which are keyed to the ends of the shafts being connected. The two hubbed gears are covered with a sleeve or shell-type member, having internal gear teeth machined in it, which mesh with the teeth of the two spur gears. There is no relative rotary motion between the internal and external gear teeth involved. They revolve together, the gears serving in the manner of keys.

This type of flexible coupling often has facilities for retaining oil within the enclosing sleeve, thus providing for adequate lubrication at all times. They are very good at compensating for either paralleled or angular misalignment, or both.

In order to avoid necessity for any substantial amount of clearance between teeth, manufacturers incorporate gears having their teeth machined spherically. Thus, regardless of the type of compensating motion on the sleeve, engagement is very firm. Also, at least one manufacturer provides them with gears having dihedral-angle teeth.

The upper view shows two floating shafts provided to connect oil engines with speed increasing gears. The lower view shows a large spacer-type coupling for a large boiler feed pump installation.

Photographs courtesy John Waldron Corp.



Applications

Many of the better gear-type couplings are well suited for use on highspeed applications. Each half of such a coupling is in perfect balance, supported on its shaft in perfect concentricity. Gear-type couplings are also often used with full success for reversing service, without resultant vibration or other trouble. It has been demonstrated that these couplings sometimes possess greater strength than the shafts they connect.

The type of prime mover connected to a load has much to do with selection. Most manufacturers of such couplings give a method by means of which the "coupling horsepower" and "utility factor" may be arrived at.

Under each type of prime mover, different utility factors are listed for different types of loads, for these also vary greatly in the severity of demand imposed on any flexible coupling. Thus, under the heading of steam-engine drive, the utility factor for driving an electric generator is 1.75, that for a blower 2.00, while that for driving a centrifugal pump is 2.25.

Gear-type couplings can be and often are used in pairs, in conjunction with a connecting sleeve, which makes them capable of compensating for far more misalignment, particularly of parallel type. They are available through a very wide range of sizes.

Large Couplings

One large double flexible coupling of gear-type has been observed, fitted wtih a connecting spacer sleeve between the cou-

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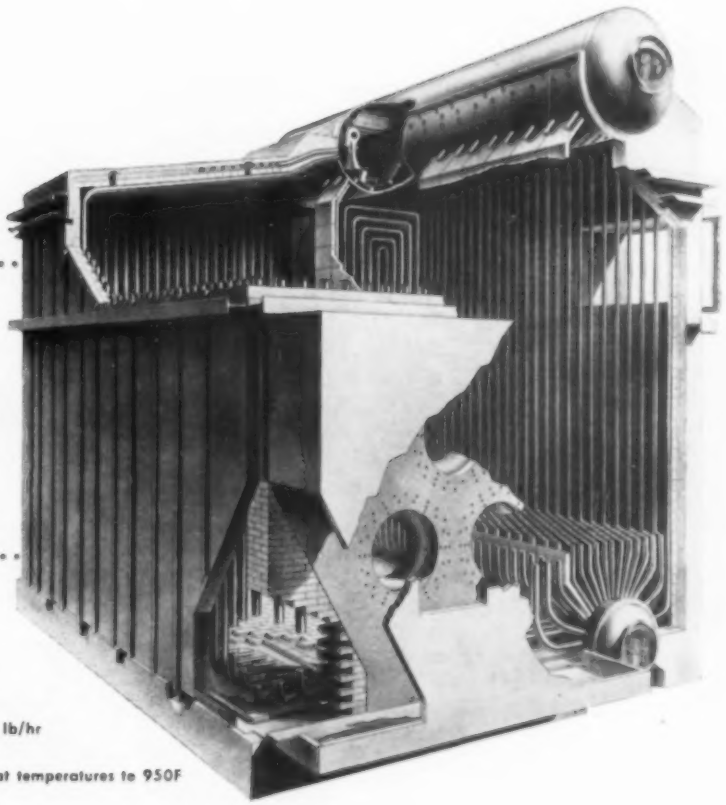

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Gear type flexible couplings should be selected with care to provide the special services for which they are recommended by their manufacturers.

plings almost four feet in length, and built to transmit 1400 hp at 18.3 rpm. This particular coupling, together with its connecting sleeve, has a total weight of 14 tons. Even larger couplings of this kind are in use. One, which connects an 8,000 hp motor to a blooming mill, has a bore of 25¾ inches, and a weight of 15 tons. It must withstand the most severe kind of steel mill service.

From what has been said about feasibility of employing gear-type flexible couplings for reversing service, it will be appreciated that such couplings are torsionally stiff. While compensating for either angular or parellel misalignment, as the case may be, they have no torsional resilency, and should therefore not be employed on any drive where such resilency is required. They are made, however, in various standard and special types.

Another gear-type flexible coupling is adapted for connecting mill-type motors. Such a coupling incorporates a special hub for the motor side of the coupling, designed to take the wide range of tapered shafts which are characteristic in mill-type motors. It also provides ample space for the nut on the end of the motor shaft.

Floating Shaft

The floating-shaft coupling is one wherein two separate gear-type flexible couplings are employed, with a separate length of shafting between them. This kind of layout enables one to meet various problems posed by remote drives, and also by excessive misalignments.

As built by some firms, two rigid female hubs are provided for use on the driving and driven machine, and a male half of a standard coupling is used at each end of the floating shaft. An arrangement of this kind requires no extra bearings.

In cases where it is desired, the hub arrangement mentioned can be reversed. That is, the rigid hubs may be installed on the floating shaft, while the flexible halves of the couplings are used on the driving and driven machines. However, it is usually considered the best practice to have the rigid hubs on the driving and driven machines, especially in any case where it becomes necessary on occasion to run the machines independently.

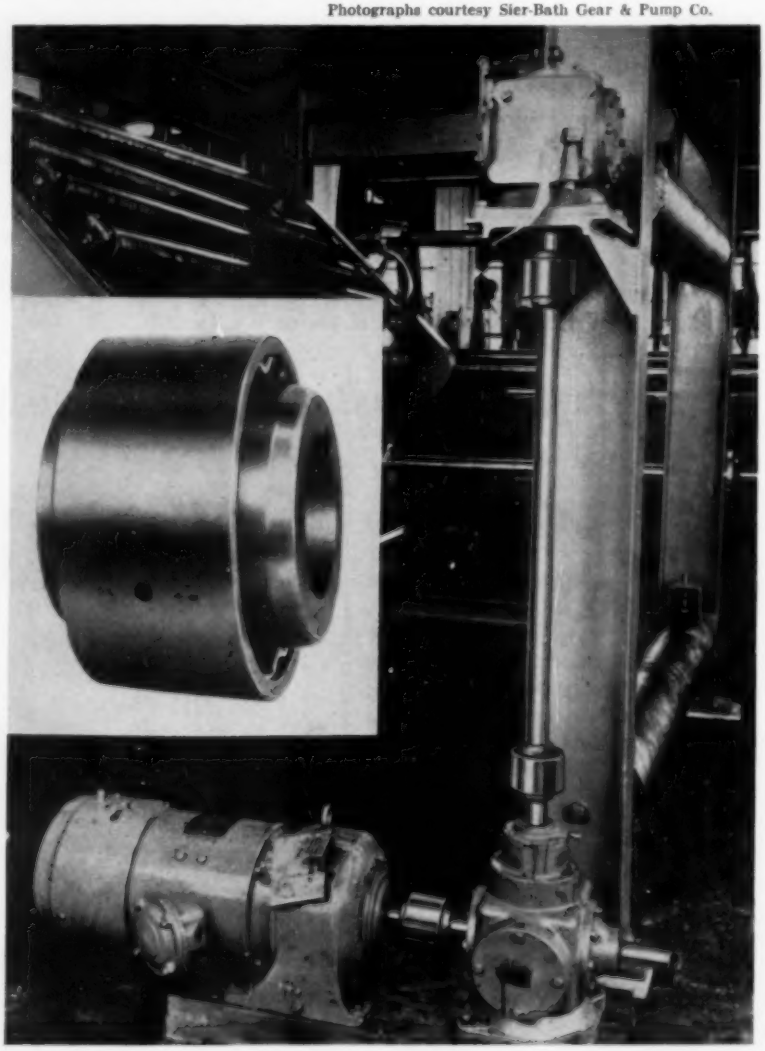
For independent operation, it is a simple matter to disconnect the driving and driven units by removing the floating shaft.

Heavy-duty types of gear couplings are provided by most manufacturers of gear-type couplings. Spacer-type couplings, as they are

(*Continued on page* 112)

Couplings installed in a paper mill on a guiding and tensioning device. Lower coupling is a standard horizontal type. Vertical floating type couplings are mounted on the upright shaft. Inset shows a standard horizontal gear coupling.

Photographs courtesy Sier-Bath Gear & Pump Co.



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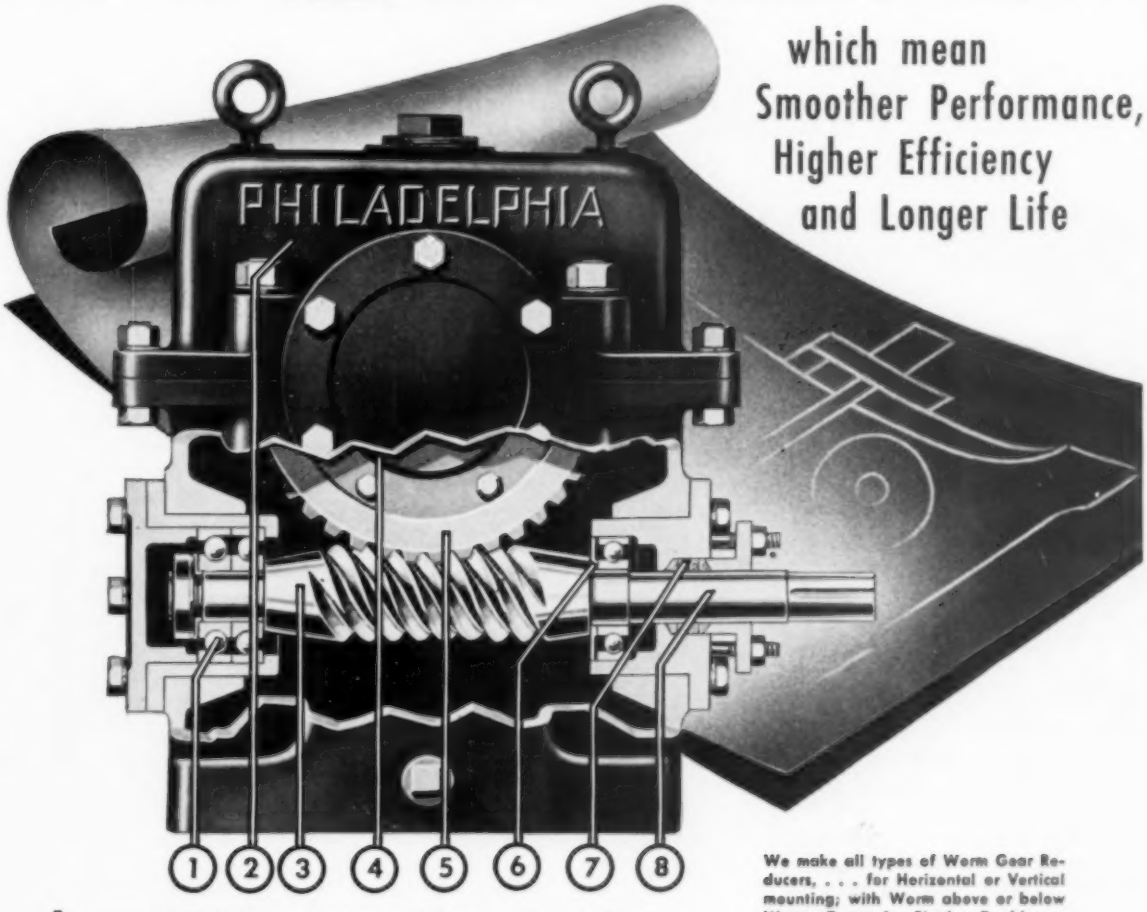

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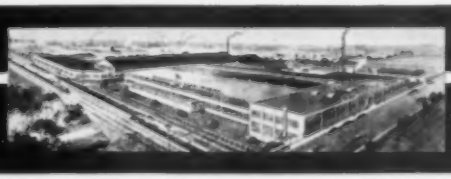

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Low Voltage Distribution Systems

By JAMES R. RUTLEDGE,* President

Huntington & Guerry Electric Co.
Greenville, S. C.

REVAMPING low voltage systems in existing plants is closely related to new work in so far as applying the principles of sound engineering practice are concerned. Principles do not change. They must be applied in a practical and economical way.

Each plant is unique. Therefore a thorough knowledge of the existing system and the best obtainable information on future developments must be at hand. With this data it is possible to plan an integrated system to serve the plant and keep production at maximum efficiency. Without advanced planning the additions will resemble mushroom growth and the system will become one of disorder. The objective should always be to provide safe, economical, and dependable service.

THE ADDITION of modern machinery, lighting, air conditioning and other equipment to existing plants usually requires some alterations to the electrical system. These changes may be minor or major depending upon the present facilities and the scope of the modernization program. For best results some planning is necessary.

Planning the expansion of an existing electrical distribution first, necessitates definite information on the present arrangement. This includes the size and characteristics of the substation, main disconnecting switches, service conductors, switchgear, feeders, distribution centers and branch circuits. Ampere readings should be obtained on the service conductors, main feeders and subfeeders. Voltage drops should be determined at principal points on the system. A tabulation of connected motor loads on each feeder and the physical location of these loads with respect to the source of power are important items. This survey should be made thoroughly enough to get a clear picture of present operations. The information can then be reduced to a single line diagram showing all related facts.

Load Estimates

The next step is far more difficult. How much load will be added? Loads are increasing beyond most predictions. Many plants have doubled or tripled their loads, or even gone further. This has a decided effect on the electrical system as a whole and every precaution must be taken to avoid future bottle necks. During this phase of the survey, management can help greatly by visualizing as near as possible future load additions.

Applying the best obtainable information on both the existing and the proposed systems, several elementary plans are considered for serving the ultimate load. Each plan is weighed as to flexibility, safety, efficiency, economy, and other factors. A logical plan can be selected and the work scheduled to meet the requirements. Without a definite overall plan, much time and money can be thrown away by temporary wiring, inadequate protection, and lost production.

Fault Currents

Low voltage systems (220-440 and 550 volts) sometimes grow in kva size until available fault currents exceed the interrupting

Speakers for Conference on Electrical Equipment

First Row: **Victor F. Sepavich,** Chairman of AIEE Textile Sub-Committee, Crompton & Knowles Loom Works, Worcester, Mass.; **H. B. Greear,** General Electric Co., Atlanta, Ga.; **M. S. Carlson,** ITE Circuit Breaker Co., Philadelphia, Penn.; **R. H. Clark,** Warner-Swasey Co., Cleveland, O.; and **Dr. George B. Hoadley,** Department of Electrical Engineering, North Carolina State College.
Second Row: **J. R. Rutledge,** Huntington & Guerry Co., Greenville, S. C.; **Howard Pancoast,** Bryant Electric Co., High Point, N. C.; **Swaffield Cowan,** Factory Insurance Association, Charlotte, N. C.; **James T. Meador,** Chairman of Conference Committee, Southern Electric Service Co., Charlotte, N. C.

*Abstracted from Revamping Low Voltage Distribution Systems in Textile Plants, presented at the A.I.E.E. Textile Conference, North Carolina State College, Nov. 1955.

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capacity of the switchgear serving them. They may even grow beyond the maximum ratings of the accepted standard switchgear as manufactured today. These limits have been clearly defined by the industry. However, in computing fault currents the reactances of service conductors, long feeder circuits, and other elements of the system must be taken into account. These have a limiting effect on fault currents and in many cases will change the economic picture.

The Power Company should always be consulted about the available fault current at their substation and about proposed changes on their system which would affect the fault current. In the larger plants the unit substation method of power distribution offers an ideal solution for keeping fault currents within reasonable limits. They afford good voltage regulation and the flexibility needed for future expansion.

Existing Feeders

Existing conduit feeders and sub-feeders can be used when available in the new system provided their physical condition is good and their location is suitable. Most insulations are impaired by over-heating. Moisture attacks varnished cambric. Oil works on rubber insulation. When existing conductors show signs of deterioration they should be carefully examined before reusing them. Meggar tests alone are not always conclusive as to mechanical condition. A visual inspection in junction boxes and other points is needed. Usually it does not pay to pull out old cables and reinstall them unless they are in excellent condition. Existing feeders should be used "in place" when possible.

New Feeders

New feeders represent a large investment of a permanent nature. They will be used much longer than the smaller wiring to machines. Therefore they should be selected and routed with this in mind. Junction boxes at frequent locations will afford easy installation and provides access for future tap-offs. These boxes should be ample in size so that conductors will not be cramped for space especially where taps are made.

The use of common junction boxes for several main feeders exposes all feeders in the box to trouble originating on any one feeder. If an arc starts, it can spread to other conductors causing severe damage and possibly interrupting production in more than one department. Each feeder circuit should be isolated throughout its length from switchboard to load. This construction is slightly higher in first cost, but the benefits of restricting trouble to one department more than offset the additional cost.

When adding new feeders to existing plants several factors must be considered to determine the most economical cost. The conditions of exposure to heat, oil, moisture, and chemical action affect the selection of insulation. Type V and Type RH insulation are very satisfactory for most departments. Where chemical action is likely to take place, type TW, RR, and type RH are generally good. Effects of chemical exposure should be checked with the chemist in charge of the plant for further analysis. Some wire manufacturers do not recommend

TABLE 1 — RELATIVE COSTS
DOLLARS PER AMPERE PER 100 FEET

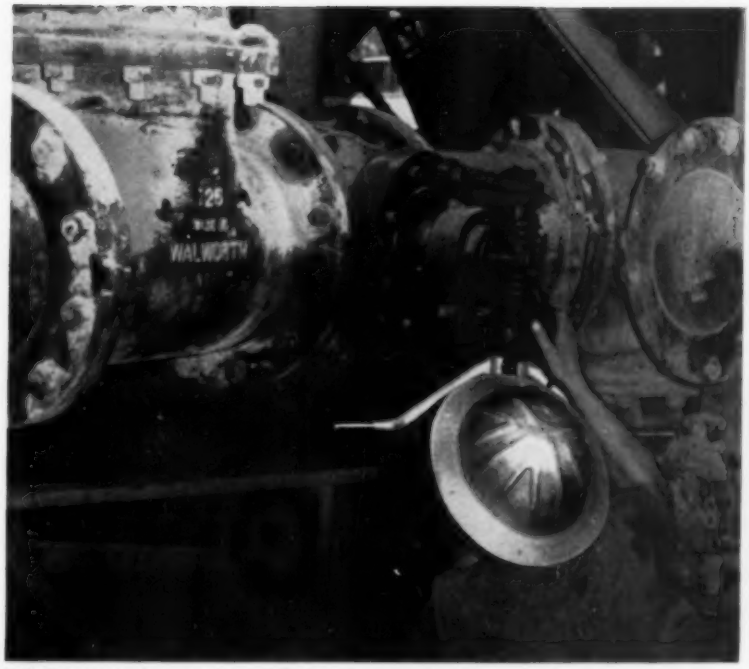
3 Single Conductors Installed in Rigid Conduit. Based on Loads Equal to 100% of NEC Current Ratings. Energy Losses Capitalized on Basis of: One Cent Per KWH, 7200 Hrs. Per Year, Rate of Capitalization 25%.

	TYPE V			TYPE RH			TYPE TW		
Cond. Size	Inst. Cost	Cap. Egy. Losses	Total Cost	Instl. Cost	Cap. Egy. Losses	Total Cost	Instl. Cost	Cap. Egy. Losses	Total Cost
12	2.97	4.23	7.20	3.85	2.83	6.68	3.75	2.83	6.58
10	2.82	3.55	6.37	3.33	2.77	6.10	3.23	2.77	6.00
8	2.64	2.80	5.44	2.60	2.51	5.11	2.80	2.25	5.05
6	2.54	2.47	5.01	2.42	2.29	4.71	2.78	1.94	4.72
4	2.52	2.00	4.52	2.40	1.88	4.28	2.89	1.54	4.43
2	2.10	1.67	3.77	1.98	1.60	3:58	2.33	1.36	3.69
1	2.19	1.54	3.73	2.12	1.44	3.56	2.43	1.22	3.65
0	2.37	1.37	3.74	2.21	1.31	3.52	2.56	1.10	3.66
00	2.14	1.28	3.42	2.05	1.21	3.26	2.40	1.01	3.41
000	2.08	1.16	3.24	1.98	1.10	3.08	2.31	.91	3.22
0000	2.32	1.10	3.42	2.26	1.06	3.32	2.52	.90	3.42
300,000	2.25	1.00	3.25	2.24	.94	3.18	2.47	.79	3.26
500,000	2.36	.85	3.21	2.37	.80	3.17	2.63	.68	3.31
750,000	2.64	.75	3.36	2.71	.71	3.42	2.99	.59	3.58

TABLE 2 — RELATIVE COSTS
DOLLARS PER AMPERE PER 100 FEET

3 Single Conductors Installed in Rigid Conduit. Based on Loads Equal to 80% of NEC Current Ratings. Energy Losses Capitalized on Basis of: One Cent Per KWH, 7200 Hrs. Per Year, Rate of Capitalization 25%.

	TYPE V			TYPE RH			TYPE TW		
Cond. Size	Inst. Cost	Cap. Egy. Losses	Total Cost	Instl. Cost	Cap. Egy. Losses	Total Cost	Instl. Cost	Cap. Egy. Losses	Total Cost
12	3.71	3.38	7.09	4.81	2.26	7.07	4.69	2.26	6.95
10	3.52	2.84	6.36	4.16	2.22	6.38	4.04	2.22	6.26
8	3.30	2.24	5.54	3.25	2.01	5.26	3.50	1.80	5.30
6	3.18	1.98	5.16	3.03	1.83	4.86	3.48	1.55	5.03
4	3.15	1.60	4.75	3.00	1.50	4.50	3.61	1.23	4.84
2	2.63	1.34	3.97	2.48	1.28	3.76	2.91	1.09	4.00
1	2.74	1.23	3.97	2.65	1.15	3.80	3.04	.98	4.02
0	2.96	1.10	4.06	2.76	1.05	3.81	3.20	.88	4.08
00	2.68	1.02	3.70	2.56	.97	3.53	3.00	.81	3.81
000	2.60	.93	3.53	2.48	.88	3.36	2.89	.73	3.62
0000	2.90	.86	3.76	2.83	.85	3.68	3.15	.72	3.87
300,000	2.81	.79	3.60	2.80	.74	3.54	3.09	.63	3.72
500,000	2.95	.68	3.63	2.96	.64	3.60	3.29	.54	3.83
750,000	3.30	.61	3.91	3.39	.57	3.96	3.74	.47	4.21



CEMENT: Lubricating a Walworth Lubricated Plug Valve in a West Coast cement plant.

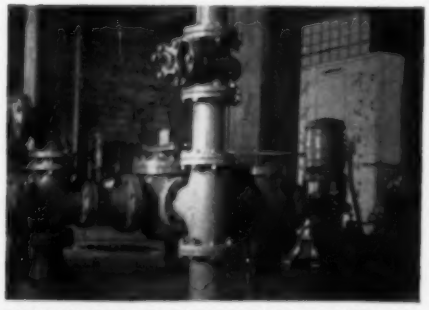
BEVERAGE: A battery of Walworth Bronze Lubricated Plug Valves installed in the blending department of a distillery.

PAINT: Eighteen Walworth Lubricated Plug Valves in a common manifold installation in the varnish division of a midwestern paint and varnish works.

serving almost any industry you can name . . .

WALWORTH LUBRICATED PLUG VALVES

FOOD: Walworth Lubricated Plug Valves are included in the piping arrangement in this large midwestern bakery.



PUBLIC UTILITY: Straight-way and three-way Walworth Lubricated Plug Valves installed in a modern West Coast sewage disposal plant.

At one time Walworth Lubricated Plug Valves were considered a "specialty item". Here are some of the features that have led to their employment in a wide range of industries as high quality 'all-purpose' valves:

(1) There are no threaded stems or complicated seating mechanisms. (2) Because the plug is always seated in the body, solid matter, which might be in the line contents, cannot wedge between the seating surfaces and prevent a tight closure. (3) The position of the wrench handle, or the marking on the plug shank, or the stop collar, clearly indicate the position of the plug. The operator can see from a considerable distance whether the valve is open or closed. (4) Quick opening and closing of the valve is assured by only a quarter turn of the plug. (5) Lubricant can be renewed while the valve is in service.

Walworth manufactures complete lines of Lubricated Plug Valves in a variety of types and materials for working pressures up to 5000 psi and for vacuum services. Sizes range from ½ to 30 inches.

See your Walworth Distributor or write to Walworth for complete information.

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Announcing... the new COPES-VULCAN VALVES

. . . with new versatility
. . . with new broader application
. . . with new attractive appearance

THE NEW HIGH-QUALITY Copes-Vulcan valves offer simplified designs and can handle any application at unlimited pressures for pipe sizes up to 16-inch. They have all the rugged dependability typical of Copes-Vulcan products. As always, they will be custom-designed with ports exactly suited to individual operating conditions.

NEW VERSATILITY IN DIAPHRAGM-TYPE, CV-D

You can now assure yourself of unsurpassed Copes-Vulcan quality in valves for operation at unlimited pressures. You may have either direct or reverse action. Rangeability is high.

Optional features include: Cooling fins and lubricator for stuffing box that will maintain low friction over a longer packing life . . . a top or side-mounted hand wheel to permit emergency operation . . . Auto-lock to hold the valve in its last position, should control air fail.

NEW SIMPLICITY IN PISTON-TYPE, CV-P

This is the high-duty Copes-Vulcan valve—simplified in appearance and design, but retaining the superb operating characteristics that have made former Copes valves so outstanding.

It is the new Type CV-P, for application where you need the ultimate in valve-operating force . . . more than is available from a diaphragm . . . where you need extremely precise positioning . . . where you want the finest valve that money can buy.

You can get this new Type CV-P Valve for pipe sizes up to 16-inch, for unlimited pressures.

Rangeability is high. Response can be characterized to meet your operating requirements.

Write, or get in touch with your Copes-Vulcan man for complete information.

COPES-VULCAN DIVISION

BLAW-KNOX COMPANY

Erie 4, Pennsylvania

REDUCING VALVES

Type TW for direct current circuits in moist locations. Types RR and RH are more suitable.

Feeders should be permanently located when possible to avoid changing them during future plant rearrangement. All hazardous areas and exposures to fire damage should be avoided. Fortunately, the comparative costs of standard types of insulation do not vary much, therefore, the proper choice can be made within reasonable cost limits to obtain satisfactory performance.

Relative Costs

The relative cost of main feeders, sub-feeders, and branch circuit wiring may be compared by using the unit cost per ampere per hundred feet of circuit. This method takes into account the original cost of installation, the current carrying capacity of the cable, and the cost of energy losses. These values will vary with material-labor costs, hours of operation, power rates and loading of the circuit conductors. Therefore the unit values must be used with discretion, taking all factors into account. The accompanying tables were prepared for illustration.

Both tables are based on today's costs of labor and materials. The hours of operation are 7200 per year. Power rate is assumed to be one cent per kwh. The annual dollar value of energy losses has been capitalized at 25% to include depreciation, interest, and taxes. Table 1 is based on loading conductors to their full respective NEC code ampere ratings. Table 2 is based on loading conductors to 80 percent of their full respective code ratings. The installation cost per ampere per 100 feet of circuit is added to the capitalized energy loss to obtain the overall cost. These values are all in dollars per ampere per 100 feet.

The installation costs include labor, materials, direct job expenses, overhead expenses and contractor's profit. It is interesting to note the small variation in cost between adjacent sizes of conductors and throughout the entire range of sizes under each type of insulation.

An increase in conduit size accounts for abrupt changes. Conduit size remaining the same, in the case of 2", it will be noted that cost increases with smaller cables as current capacity decreases. This confirms the general rule of filling the conduit with the largest conductors it will carry to get maximum use of materials.

Installation costs are higher per ampere for the smaller conductors and for the 750,000 CM size. The higher costs for type TW insulation in medium and larger sizes are due to the lower ampere ratings of these conductors.

The energy losses per ampere increase consistently as smaller conductors are used indicating the rapid decrease in area of copper per ampere of load. With smaller conductors carrying their rated load the percentage of loss is greater than in the larger conductors. When losses are capitalized and added to installation costs, the greater efficiency of medium and large conductors is apparent.

Table 2 indicates costs when cables are loaded to 80 percent of the code rating. The code requires margins of 25 percent of actual current in some cases. These values indicate an increase in installation cost per ampere and a decrease in losses per ampere per 100 feet of circuit affected by the reduced current. The installation costs are relatively higher due to the reduction in amperes transmitted. This increase in cost is partially offset by the reduction in energy losses. The total cost is about 7% to 12% higher at the reduced rating.

These relative costs indicate that where a specific kind of insulation is not required because of special conditions, the lowest costs for small conductors No. 12 - 10 - 8 occur in the TW group. The medium sizes 6 - 4 - 2 - 1 - 0 - 00 - 000 are cheaper in type RH. The larger sizes 0000 - 300,000 - 500,000 - 750,000 can be either RH or V leaning slightly toward RH by a small margin. Often personal preference or availability of material can be the deciding factor of selection. However, conditions of exposure should always be a strong governing factor in the selection of conductor insulation. Surrounding temperatures of the room must be taken into consideration, as required by the code, and current carrying capacities of conductors adjusted accordingly. This applies to temperatures above 86 F.

Protective Devices

Some plants are still using fuses on the ceiling for protection of branch circuits and sub-feeders. These are hazardous to personnel and very inconvenient to service. It is strongly recommended that these be replaced by safety switches or air circuit breakers mounted in accessible locations. These may be installed in groups on permanent walls. Ventilation should be afforded on all sides of these devices to keep temperatures within range. Provision should be made to prevent condensation on walls from wetting or entering these enclosures. This can be accomplished by spacing them out an inch or two from the wall.

Safety switches with fuses are inherently heat generators unless their loads are well below their ratings. The continuous load should not exceed 75 percent of the rating for satisfactory service. This applies also to fused type distribution panels. The mains should always be liberal in size. Loads on branches are limited to about 65 percent of rating.

Air circuit breakers are becoming more popular. They afford accurate overcurrent protection, safety of enclosed parts, and protection from single phasing when they open the circuit. The first cost is about 50% higher.

Conduit and Cable

Flexible conduit for motor terminal connections is being replaced with 4 conductor Neoprene sheath cable or Type SO cord. This does away with the sharp edges on flexible conduit which are potential sources of damage to insulation.

The ground connection to motor frame is made with the fourth wire. The other end of this wire is connected to a ground wire in the starter. This ground extends back to the panel, distribution center, or to the larger conduit of the branch feeder. This method is superior to the exposed strap

(*Continued on page* 112)

SHOPPING CENTER TEXAS STYLE... BIG

GULFGATE SHOPPING CITY, Houston, Texas. *Architect:* John Graham and Company, Seattle. *Contractor:* Farnsworth and Chambers.

840,000 SQUARE FEET OF SPACE!

Gulfgate Shopping City near Houston, established by Allied Stores Corp., is like most things in Texas . . . big. The $20,000,000 project will house 90 to 100 stores, including Joske's department store with 207,000 square feet of space. Overall, there are 840,000 square feet, facilities to park 20,000 automobiles a day. Fabricated steel for this gigantic, modern development was furnished by Ingalls.

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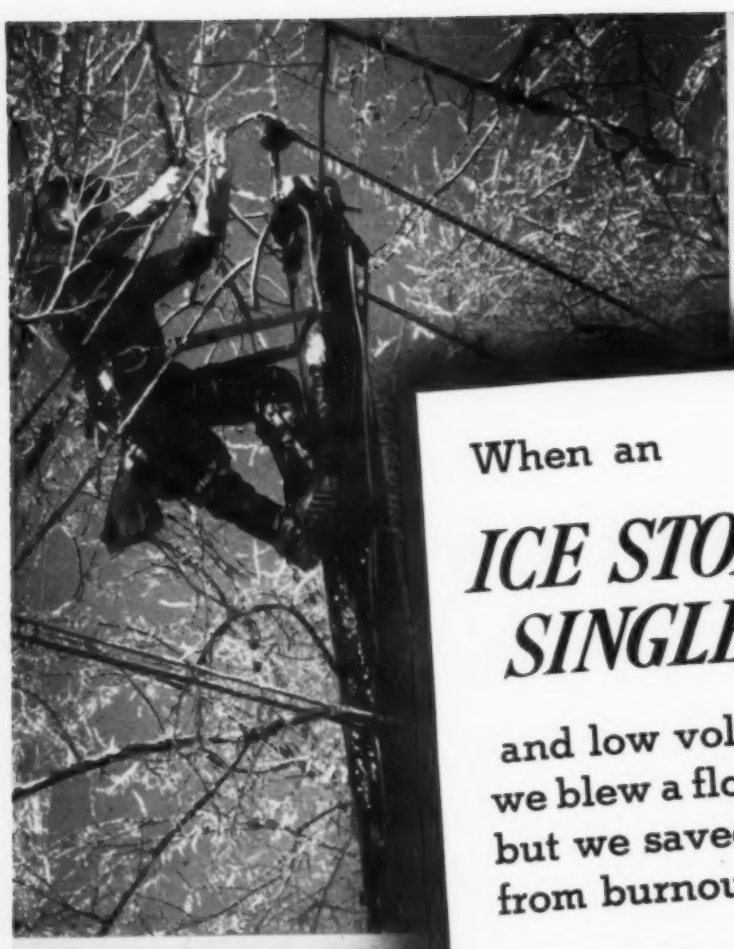
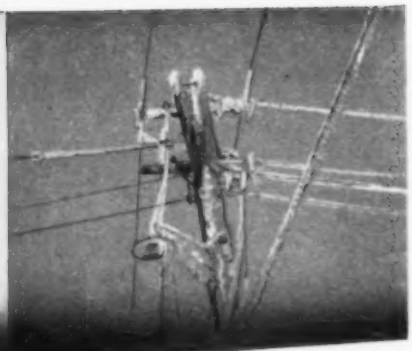




When an

ICE STORM CAUSED SINGLE PHASING

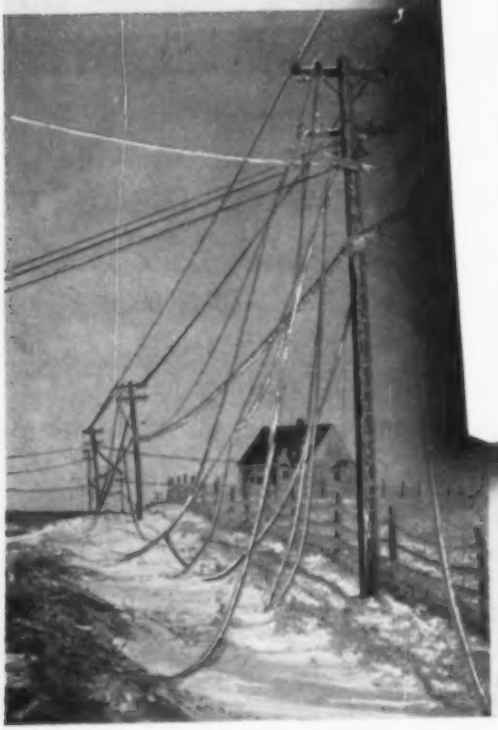
and low voltage conditions . . we blew a flock of Fusetron fuses but we saved over 40 motors from burnout

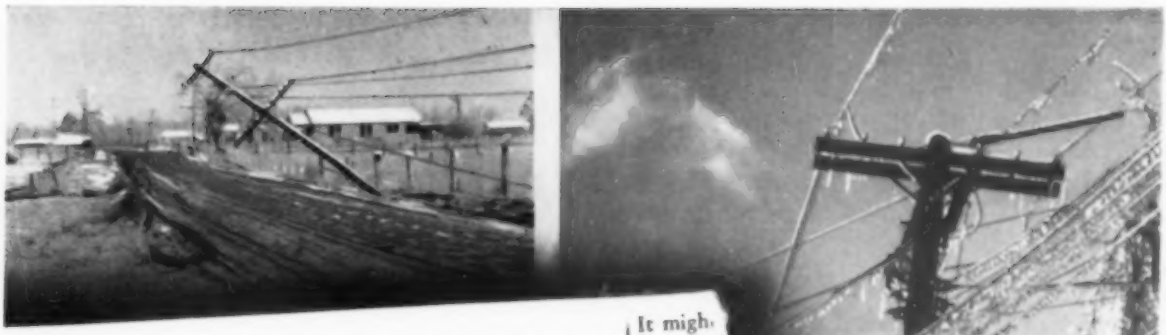
"For twenty-four hours after the bad ice storm of February 15, 1950 we were endangered by single phasing and low voltage conditions due to the damage done the power lines by the ice.

"During this period, we blew a flock of Fusetron dual-element fuses—around 240 in fact—but we figure that was a very cheap price to pay for saving over 40 motors from burning up.

"After this experience we didn't lose any time in putting all of our plant and equipment under Fusetron Fuse protection."

Michael G. Kupcho,
Master Mechanic
Ashland Shirt and Pajama Company
Ashland, Pennsylvania





You too, can be safe from electrical hazards by using

Fusetron DUAL ELEMENT Fuses

They provide 10 Point Protection

1. High interrupting capacity—protect against heaviest short-circuits. Have proven on tests to open safely on circuits set to deliver in excess of 100,000 amperes.
2. Protect against needless blows caused by harmless overloads.
3. Protect against needless blows caused by excessive heating—lesser resistance results in cooler operation.
4. Provide thermal protection — for panels and switches against damage from heating due to poor contact.
5. Protect motors against burnout from overloading.
6. Protect motors against burnout due to single phasing.
7. Give DOUBLE burnout protection to large motors — without extra cost.
8. Make protection of small motors simple and inexpensive.
9. Protect against waste of space and money — permit use of proper size switches and panels.
10. Protect coils, transformers and solenoids against burnout.

Write for bulletin FIS.

DON'T RISK LOSSES — *Start today to install FUSETRON fuses throughout the entire electrical system!*

It migh
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Mabel Roberts

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FUSETRON
TRUSTWORTHY NAMES IN ELECTRICAL PROTECTION
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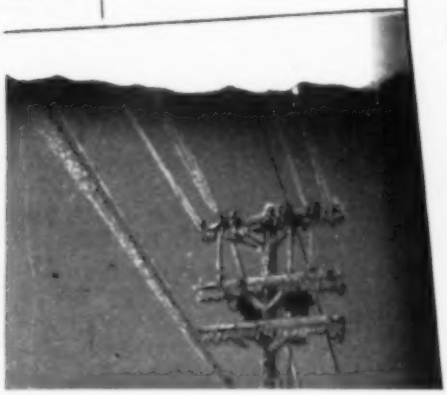


For loads above 600 and up to 5,000 amps., . . . use BUSS Hi-Cap Fuses . . .

They have unlimited interrupting capacity to handle any fault current regardless of system growth.

Overload protection as well as short-circuit protection.

Coordinated with Fusetron fuses on feeder and branch circuits to limit fault outages to circuits of origin.

Dependable service through the years because there are no moving parts to stick or get out of order.

Write for bulletin HCS.

BUSSMANN MFG. CO. (Div. of McGraw Electric Co.) St. Louis 7, Mo.

HELPING the *MAN-IN-THE-PLANT*

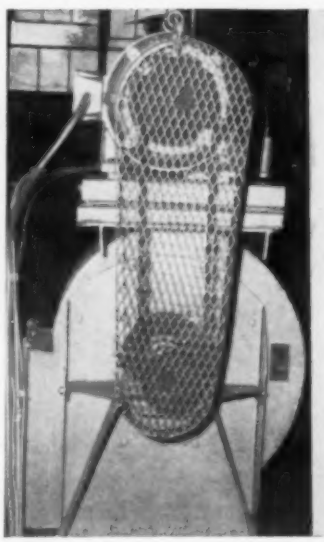
Ideas . . Methods . . Gadgets

Time-Saver for Routine Maintenance Checks

WE ARE FIRM believers in standardized maintenance procedures on a systematic basis. Formerly, we gave a "rev" check only when it appeared that blower speeds were below normal operating speeds.

This meant dismantling the protecting motor guard, sometimes quite a problem for a lone maintenance man. Now, we make regular revolution checks by providing a cut opening in the guard, photo 1; making for easy tachometer checks, photo 2.

By L. W. FITZPATRICK, Chief Engineer, Department of Corrections, Jefferson City, Missouri.



Line Cleaning with Solvents and Pigs

DEPOSIT build-up had reduced the inside diameter of 6-inch water pipe to about 3½ inches. This condition caused such a serious loss of flow that replacement of the 600 foot line was considered.

The water line, connecting wells to a storage point, contained a reddish-brown scale 1¼ inches thick. An analysis performed in a laboratory showed that the scale consisted of iron phosphate and hydrated iron oxide.

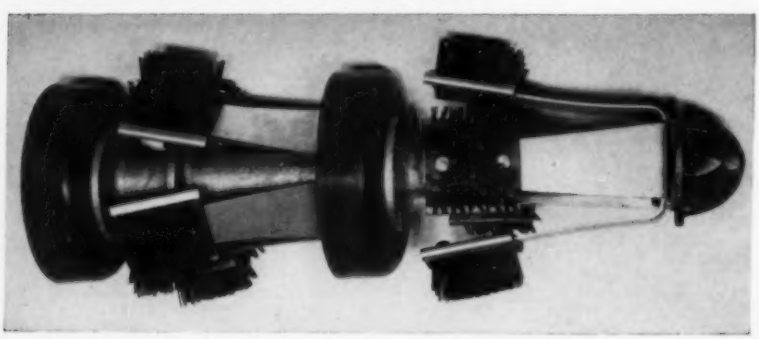
A combination chemical - mechanical cleaning method was the answer Dowell engineers recommended for this problem. Specially prepared solvents were used to propel a spring-brush type pipe line pig through the line.

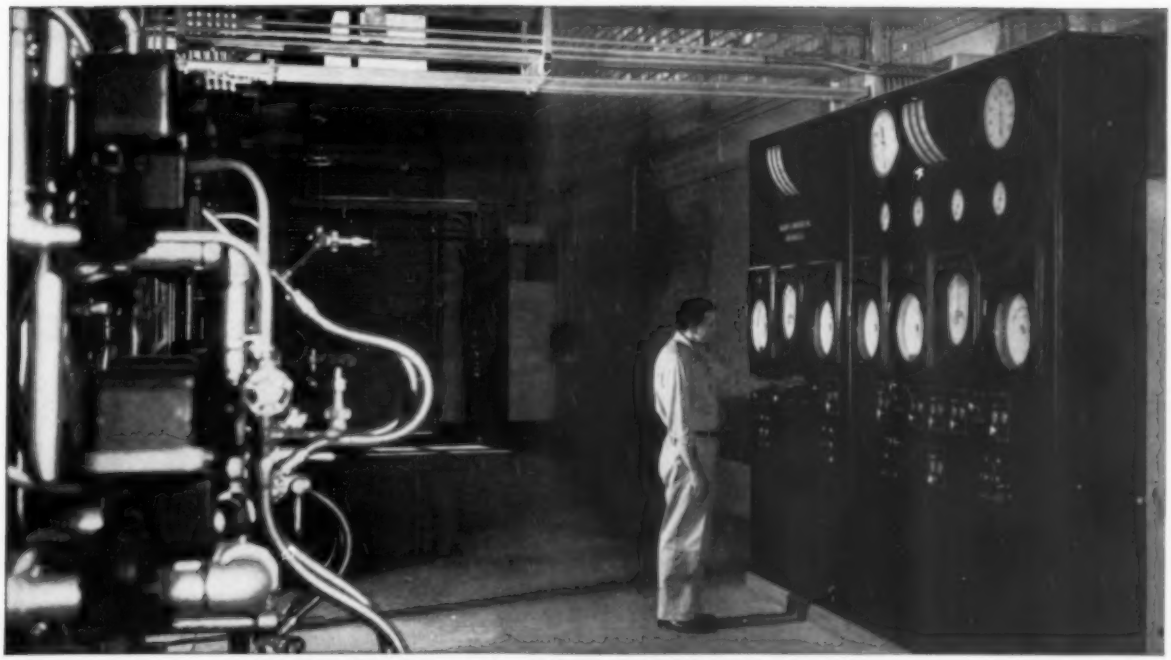
To make an opening for the 6-inch pig it was necessary to remove a valve and check from the line. The pig was inserted and the valve and the check were replaced. Then the solvents used to propel the pig and dissolve the scale were pumped into the line. The pressure was slowly brought up to 110 pounds behind the pig. At that pressure the pig started to move at the rate of a fast walk.

The chemical action of the solvents plus the mechanical action of the pig removed about 98% of the deposit the first time the tool passed through the line. A second pass removed the remaining scale. Full capacity was restored, and the expensive and time - consuming step of replacing the line was not necessary.

Pipe line pigs used in this man-

The pipeline pig shown above is the type used on the job described. The steel brushes are mounted on extra heavy steel springs. The springs are designed to expand as the brushes are worn down.





Anheuser-Busch's new Van Nuys, California, Budweiser brewery gets "big-station" boiler efficiency automatically with a complete Republic Combustion Control System centralized at this panel.

INDUSTRIAL POWER PLANTS CAN OPERATE AT CENTRAL STATION EFFICIENCY

● The power plant at Anheuser-Busch's new Budweiser brewery, Van Nuys, California is a good example of how a modern industrial plant has taken advantage of cost-cutting methods used by central stations. The plant has three 48,000 lbs./hr. gas or oil fired boilers which produce steam at 200 psi. All three boilers are operated and coordinated by a Republic Automatic Combustion Control System which:

1. **Automatically maintains constant steam pressure by controlling the heat input to the boilers in accordance with the boiler load.**
2. **Automatically maintains maximum combustion efficiency by simultaneously and continuously controlling a measured fuel and air input to the boiler.**
3. **Automatically maintains any desired load division between the boilers.**
4. **Automatically maintains correct draft in each furnace.**

In addition, a Republic two-element feed-water system which is tied into the combustion control system automatically adjusts the water supply to boiler requirements at all loads.

This "big-station" automatic control means *continuous* firing efficiency for Anheuser-Busch, assuring lowest fuel cost per pound of steam produced. Fixed costs are also reduced since boilers are operated to deliver all of their rated capacity during "peak" loads. Extra stand-by equipment is not necessary. Finally, chain-of-event troubles that are caused by improper operation of auxiliaries is avoided by smooth simultaneous adjustments made by the master control system.

Let Republic's combined experience in combustion control systems for both industrial plants and central stations help you operate your power plant more efficiently. No matter what size or type of boiler, load conditions, fuel firing or draft arrangement, Republic can design and produce a control system that will operate it for maximum efficiency—automatically. Write for full details.

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ID-5512

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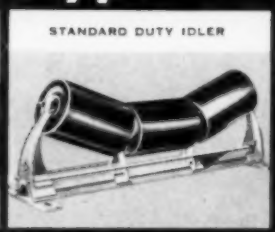
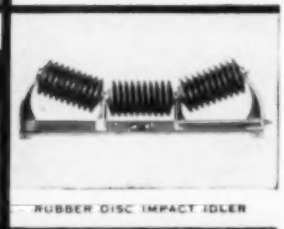

STANDARD DUTY IDLER

QUARRIES

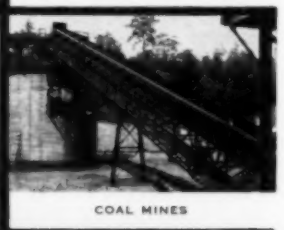
GRAIN HANDLING CONVEYOR

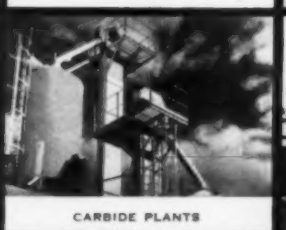
FEED MILL

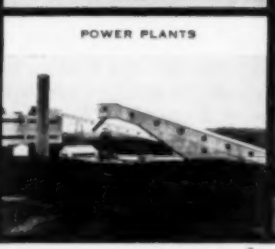

RUBBER DISC IMPACT IDLER

MINES

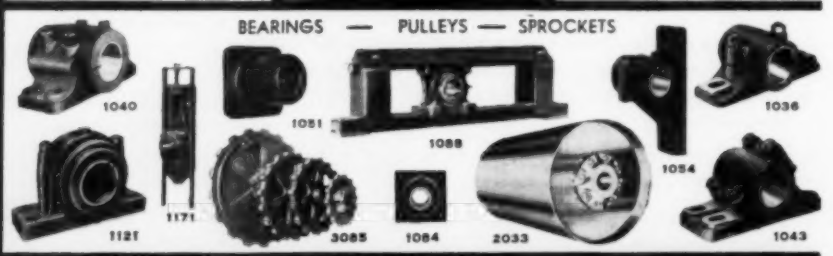
CONVEYORS – ALL TYPES


COAL MINES


CARBIDE PLANTS


POWER PLANTS

OIL MILLS



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at Moundsville to Burn West Virginia Coal

Detroit RotoGrate is a modern spreader stoker with grates that move slowly forward, discharging ash at the front. It will burn any type of Bituminous coal or Lignite and many types of combustible refuse with high efficiency. Handles rapidly fluctuating loads. Produces more capacity per square foot of grate area. Precise control of fuel feed with grate speed and air supply provides smokeless operation.

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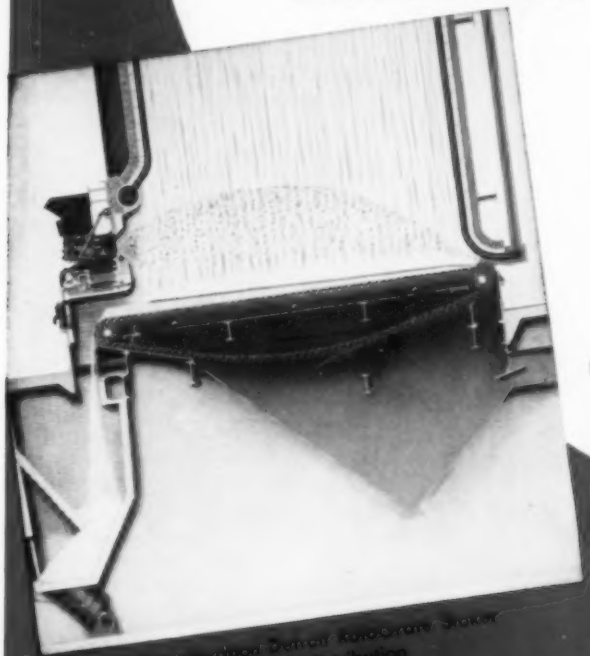
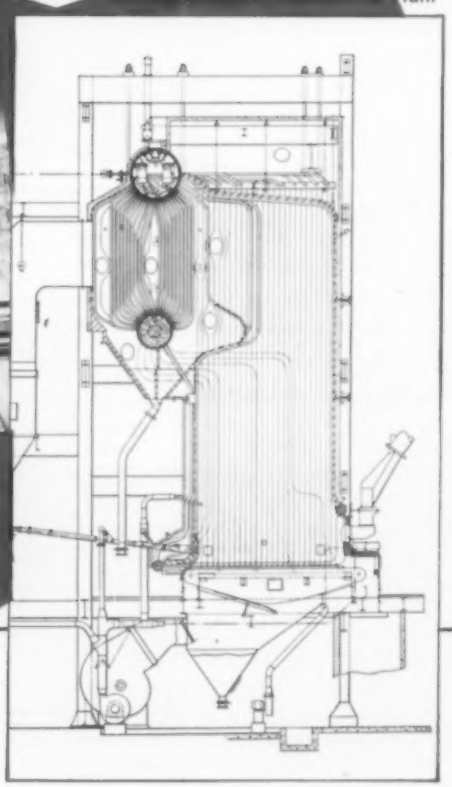


Side elevation Detroit RotoGrate Stoker shows uniform fuel distribution and continuous cleaning feature.

Moundsville, West Virginia, (Marshall County) Plant, Solvay Process Division, Allied Chemical & Dye Corporation.

Detroit RotoGrate Stokers with Babcock and Wilcox two drum Sterling boilers in Moundsville Plant



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This NEW CONSTRUCTION Revolutionizes Swivel Casters!

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EASIER SWIVELING double ball race held in rigid alignment. Tremendous increase in swiveling efficiency.

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Complete information on LOCK-WELD casters is contained in Bulletin 23-33, free on request.

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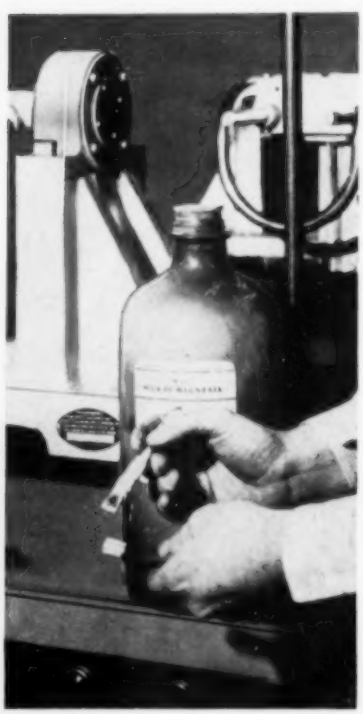
ner are especially useful in removing scales that are soft or medium in hardness.

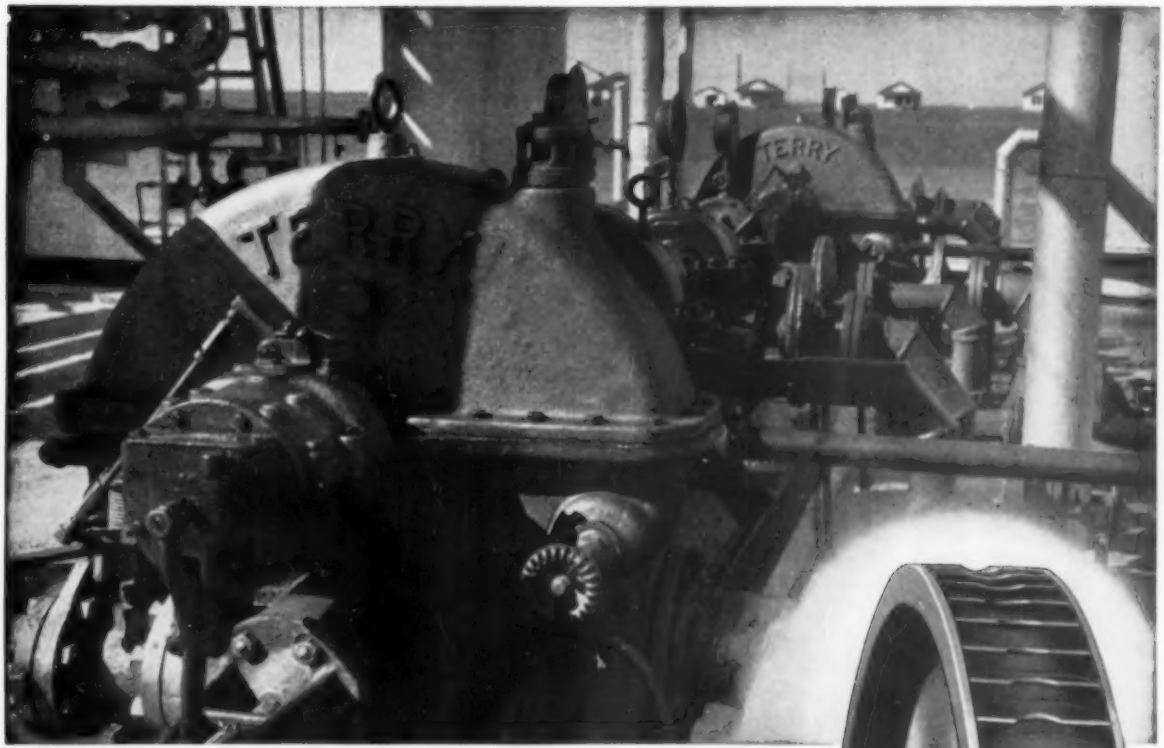
The pipe line pig consists basically of a length of pipe fitted with flexible rubber cups and steel brushes. The brushes help to remove the scale as the pig is pushed through the line by pumping solvents behind it. A small amount of solvent is jetted through the nose of the pig to prevent the loosened scale from piling up in the line and stopping the tool.

Hot Thread Medicine

RESEARCH engineers at General Electric's Thomson Laboratory, prescribe milk of magnesia as the best tonic for keeping furnace nuts and bolts turnable.

The scientists found that this simple household remedy prevents nut and bolt threads from melting together and locking even after three weeks of heat high enough to melt a brass door knob. Shown here is the procedure for doctoring clamping bolts before running a test including microscopic study of new high temperature metal alloys for use in future electrical power generators.





Two Terry Turbines equipped with "trouble eliminators"

Because these turbines have solid wheels, they can take a lot of abuse, without complaint. Here's why:

1. The wheel has no separate parts to become loose or work out. It is a single forging, in which a series of semi-circular buckets is milled.

2. Blade wear is of little consequence because the power-producing action of the steam takes place on the curved surfaces at the back of the buckets. Wear does not materially affect horsepower or efficiency.

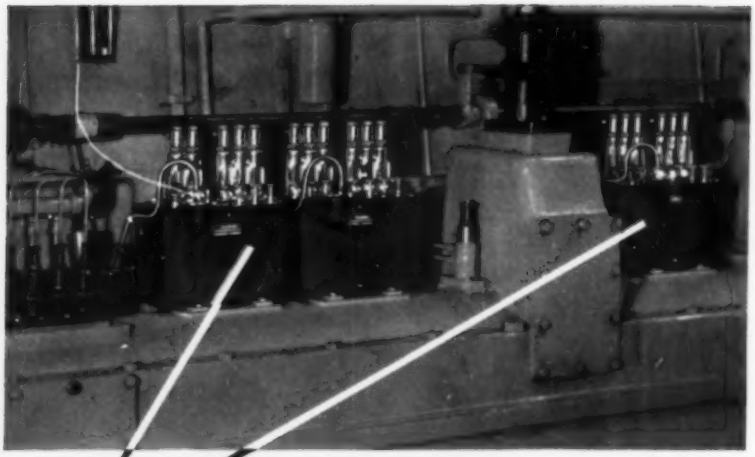
3. The blades cannot foul. There is a one inch clearance on either side of the wheel and, in addition, the blades are double rim protected. There is no need for close axial blade clearance, because the steam enters the buckets in a direction at right angles to the shaft.

For complete details of these *work horses of industry*, send for a copy of bulletin S-116. No cost or obligation.

THE TERRY STEAM TURBINE CO.

TERRY

TT-1199



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FORCE FEED LUBRICATORS Control Lubrication to Save Oil and Cut Production Losses

Outdated lubrication practices can waste half, or more, of all the lubricants you buy. Only the exact amounts needed — never more and never less — are used with Manzel Force Feed Lubricators. There's no waste!

And because Manzel Lubricators operate dependably and automatically without thought or attention, they save labor and the cost of unexpected breakdowns caused by faulty or neglected lubrication. They quickly pay for themselves and then keep on saving money through the years.

Can be built into new, or installed on existing equipment. On any question of how best to lubricate, always call or write Manzel.

SPECIAL QUALITY FEATURES OF MANZEL LUBRICATORS

- Completely protected with Parco Lubrite
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- Every unit factory-tested before shipment

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What Ailed The Re-Saw?

IN A LARGE wood working shop doing a great deal of contract work in job lots, a large ban re-saw was kept for the occasional cutting to needed sizes from heavier lumber stocks. It seemed to be in satisfactory condition, for the short runs that usually came its way. But one day, there came an order that required it to work steadily all day long for several weeks. Then the complaints really started coming.

The maintenance supervisor inspected the running machine and found the upper pulley mount vibrating badly, apparently because of unbalance in this pulley. It looked as if some balance weights had somehow gotten detached from their fastenings. But a careful inspection showed there had never been any balance weights attached to it anywhere!

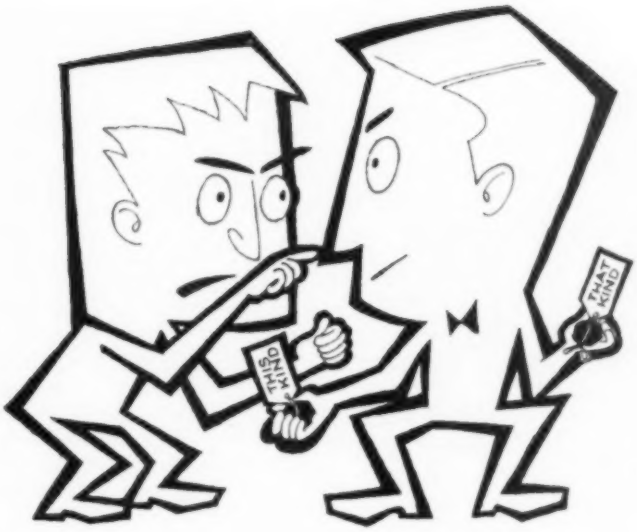
Knowing he must do something and suspecting that the outside surface of the wheel had somehow worn out of true, the maintenance supervisor ordered the heavy wheel dismantled and sent to the nearest job shop having a lathe that could swing a job of this 48" size, and instructed the previously satisfactory shop to reface the pulley, and then balance it properly.

It came back in due time with the working face refinished, and believing the job in order we had it re-assembled and removed the heavy overhead rigging.

But when the machine was started, it was found that the job shop had balanced the pulley by "jawbone" only, and the vibration was as bad or worse than ever.

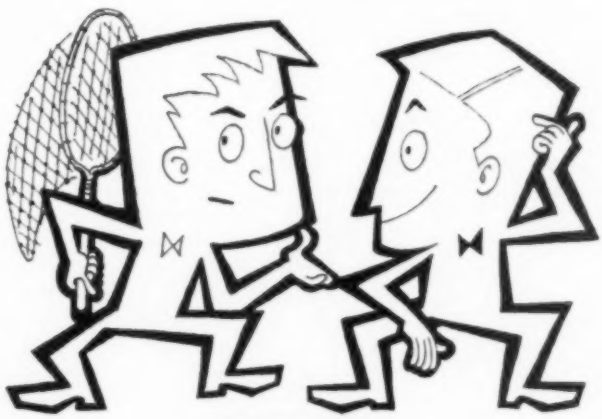
The wheel was heavy and hard to handle with its center some ten feet off the floor. It had a taper bore, and was entirely supported from one end of its shaft. To balance it meant we had to make a temporary taper arbor, with a piece of parallel turned arbor at each end, to ride on balancing ways, exactly level in all directions, and solid enough to stay that way, or else there was no use to start the job.

Convinced there was no alternative, all hands got busy dismant-



What's the big idea buying several kinds of coal for our steam plants?

It's a good idea. The kind of coal that burns most economically in the old boilers isn't efficient for the new ones.



How do you know you're right?

Look at the coal bills. We are generating more steam at a lower fuel cost. You can tell from the ashes we are getting more complete combustion, and there's less clinkering.

Where did you get this idea, anyway?

From the C & O Coal Department. They convinced us that different types of burning equipment need different types of coal. From the high quality coal produced on the C & O, we selected the quality and size of coal that works best in our particular installations.

P.S.

There's a lot more to buying coal than the cost per million BTU. Why not contact coal producers on the C & O to solve your particular fuel requirements, or write to: R. C. Riedinger, General Coal Traffic Manager, Chesapeake & Ohio Railway Co., Terminal Tower, Cleveland 1, Ohio, for the assistance of a C & O fuel service engineer.

Chesapeake and Ohio Railway

WORLD'S LARGEST CARRIER OF BITUMINOUS COAL

Laboratory demonstration shows foaming of highly alkaline solution in glass test cylinder.

Same solution after addition of 12 ppm of Bird-Archer Concentrol antifoam.

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LOW COST CHEMICAL METHOD

FOR CONTROLLING FOAM

AND BOILER WATER CARRYOVER

LABORATORY PROOF

● Tests and plant operating records in all parts of the country have established the effectiveness and economy of Concentrol chemical treatment to combat wet steam problems. Where boiler water carryover is caused by foaming due to high alkalinity and high proportion of dissolved solids in the water, Concentrol is essentially a surface active agent that causes breakdown of bubble film, preventing foam formation.

Concentrol is supplied in liquid, powder or briquette form—can be fed either continuously or in slugs to boilers. Formulations of Concentrol can include organic sludge conditioning agents and other water treatment chemicals for boiler treatment as well as antifoam. Concentrol eliminates the need for costly pre-treatment of water and high blow-down rate. It is fast acting and resistant to hydrolysis or breakdown under normal boiler temperatures and pressures.

A Bird-Archer 8 Point Service Engineer is as near as your phone. For friendly counsel call him or write directly to Bird-Archer outlining the details of your boiler operations.

Engineering plus Chemistry equal Bird-Archer Service

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tling the re-saw the second time, and turning the temporary taper arbor, and setting up some balancing ways.

Having nothing better, the foreman used some heavy cold rolled steel shafts of equal diameter, set up level and solid, and placed the wheel and arbor on them. The result was startling, considering the 10,000 fpm at which the surface of the wheel had to operate. It was horribly out of balance.

It was decided, in view of its high speed, and the consequent danger if anything went wrong, to bring the wheel to balance by taking off excess weight on the heavy side instead of chancing the adding of weights to the light side. Having no mechanic he cared to trust, the foreman did the job himself.

First he chipped the inside of the heavy side of the wheel with hammer and chisel until the job showed some signs of approaching balance and then the finishing touches were completed with a file.

After proper balancing the machine ran as quietly as a good watch. Checking its previous history, the manager found it had been built during the stress of war time. It was at least twenty years old, and had done some running during that whole time. It had never before been balanced and the conundrum is, "how did it ever get by?"

Bearing Modernization Speeded With Oil Pressure

HAVING A TASK on hand of removing a large number of small bronze sleeve bearings and replacing these with roller bearings we tried several devices to accomplish this job in an economic manner. The research shop developed a neat, two pronged extractor that functioned reasonably well for most extractions but here and there an obstinate one became distorted with tension and had to be cautiously drilled out at considerable loss of time and expense.

Illustrated is the little gadget that solved the problem by em-

MORE STEAM
when you need it with QC water tube BOILERS!

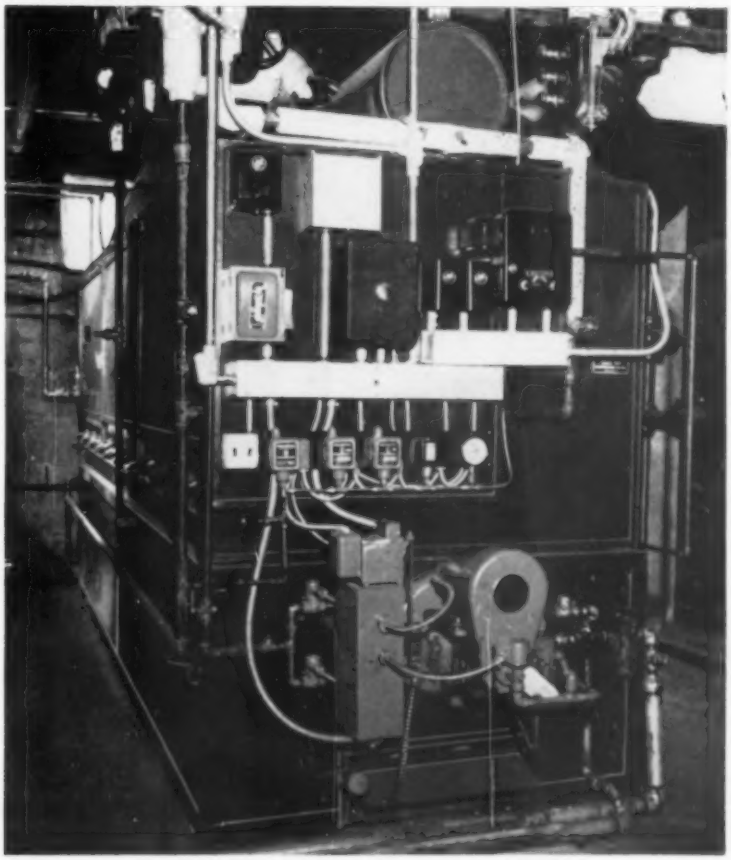

Photo shows typical installation of a 100 hp QC Boiler

Capacity of 100 hp QC Boiler

Minimum Safety Valve Capacity (ASME Code)

6578 lbs. steam per hour

QC Boiler Delivered Steam, continuous operation

4313 lbs. steam per hr.

QC Boiler Horsepower Rating (100 hp)

3450 lbs./steam/hr.

Have more steam readily available . . . fast . . . for extra loads when needed or for increased production facilities!

The large reserve capacity of QC Boilers gives you this advantage PLUS normal continuous operation at maximum efficiency.

Your steam capacity stays UP . . . your cost stays DOWN . . . all the time!

QC "bent tube" water tube boilers cost less to operate and require less maintenance. Side panels are easily removable for cleaning and for boiler inspections. Coal, gas or oil-fired . . . from 10 to 350 hp.

For *more* steam, *faster* steam and *drier* steam at less cost, install a QC Boiler in your plant!

For complete information, write

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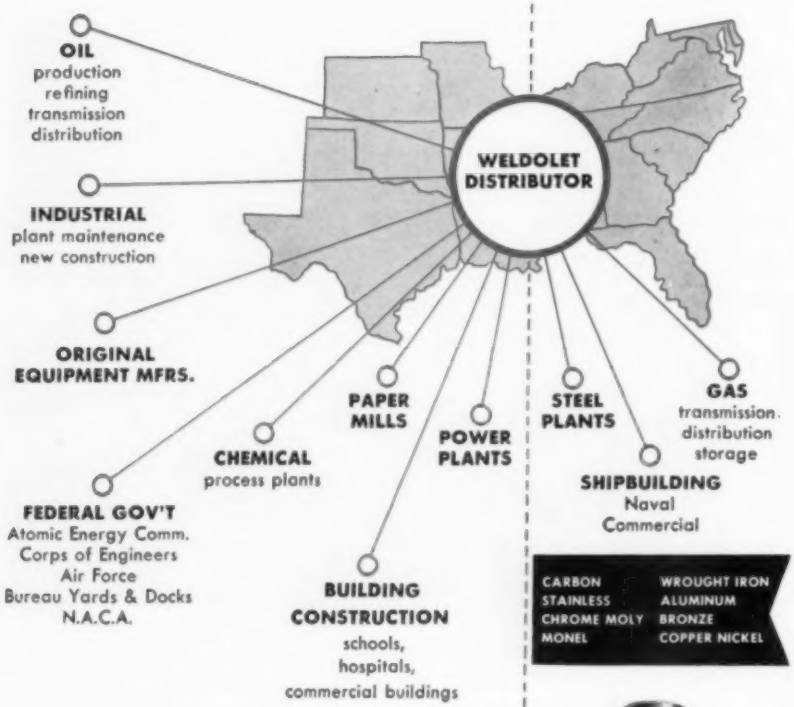
serve these Southern Industries



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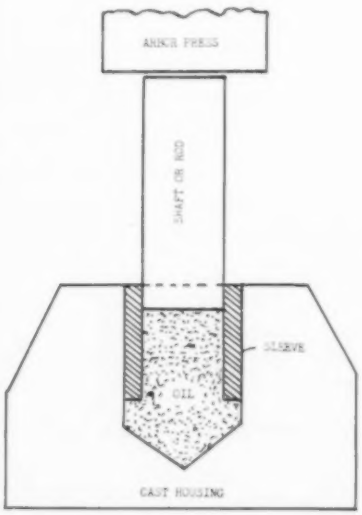
ploying the hydraulic principal to remove even the most obstinate units. As indicated, the sleeve bearings were seated in a blind hole with a fairly tight press fit. Apparently years of expansion and contraction had caused some bearings to seat even more snugly than when originally pressed in.



The bearing was laid on a solid surface with the open end up and was then filled with ordinary lubricating oil. A polished shaft of the correct diameter was then pushed into the sleeve with an hydraulic press fastened in an upright stand above the bearing. The pressurized oil in the blind hole forced each bearing out with neatness and dispatch. Needless to state, because the bearing wells were not damaged the new bearings were pressed in with little effort.

By PAUL C. ZIEMKE
Oak Ridge, Tennessee

Arms Saved

OPERATORS are not expendable, nor are their arms, so a North Carolina finishing plant decided to stop wrapping them up on the beam rolls when their hands got caught in the process of starting an "end" on the roll.

Because the general principal of the safety device they developed can be applied to other winding operations, this description should

here's how high temperature piping can flex its muscles

Each pipe hanger is scale tested to rigid tolerances by a skilled workman at the Navco plant. After final assembly and inspection, the hangers are carefully crated and readied for shipment.

NAVCO *Counterpoise* Pipe Hangers

Since high temperature piping has no respect for equipment connections, the entire piping system must flex its muscles to absorb the strain of expansion and contraction. This prevents serious stresses that could endanger the installation.

And how does high temperature piping flex its muscles? With Navco's precision engineered Counterpoise Pipe Hanger—the hanger with a load-supporting effort that is of constant value throughout the range of travel. This permits weightless movement of the entire piping system.

To learn how power plants, oil refineries and chemical plants can have piping systems that flex their muscles, write today for Navco's 12-page Counterpoise hanger bulletin #153.

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EXPERIENCED ADVICE

The familiar process of softening "hard" water for make-up in low pressure boilers has undergone some interesting changes in recent years. In the first place, with the rapid development of ionXchange processes, several groups of completely-new resins have become available — to make water-softening more complete, more efficient, and more economical. In the second place, there are now several *different* "softening" processes available, each producing different dissolved compounds in the effluent, and each having its particular purposes and applications.

WE WERE AMONG THE FIRST
TO DEVELOP ION-EXCHANGERS

Finally, the mechanical design of the systems has undergone important changes, with the great increases in resin capacities and the various new materials now in use. Our experience with ionXchange starts with the year that practical resins were first introduced, and covers a wide variety of successful installations. *This experience is available to you to help improve your water-softening operations.* Just drop a line to . . .

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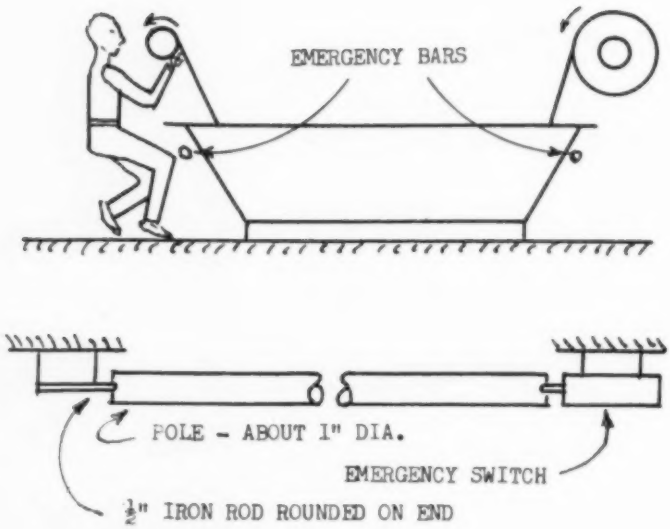


prove helpful in a number of industries besides textiles.

The insurance company gathered some fragmentary information on what had been tried at another plant, so with that as a basis the finishing plant engineers developed a positive, fool-proof, and automatic system. We don't know if it has ever been activated for its intended purpose, and hope it will never need to be, but test operation has been most satisfactory.

As shown on the accompanying sketch, emergency bars are located just below the rim of the Jigg tub, along each side. A blow by a knee or hand knocks out the bar and activates a spring-loaded switch, which instantly reverses the rotation of the beam rolls and unwinds the entwined member. A timer in the electric circuit stops the reverse rotation after two or three turns. Resetting the bar in its place allows normal operation to resume.

The location of the emergency bar is such that in the event a man's hand is caught in the roll of cloth his knee is driven against the bar by the squatting position into which he is forced, without conscious effort on his part.

Metal bars are likely to become corroded in place and could bend without tripping the emergency switch, hence the use of wooden bars that can be broken if necessary, thus enhancing the "fail safe" characteristics of the system.

The electrical equipment required consists of a magnetic reversing starter, a timer relay which starts its time cycle when deenergized, and plunger-type spring-operated limit switches with both normally open and normally closed contacts; all of these are standard industrial items. The electrical hookup necessitated revising some of the factory installed connections in the reversing starter.

Booster Heater

EARLY in 1955, a large North Carolina weaving plant installed a Heat-Pack Far-infrared radiant heater frame on a slasher for the purpose of increasing production. The increase in speed of 50% has been even better than was hoped for at the time of the installation.

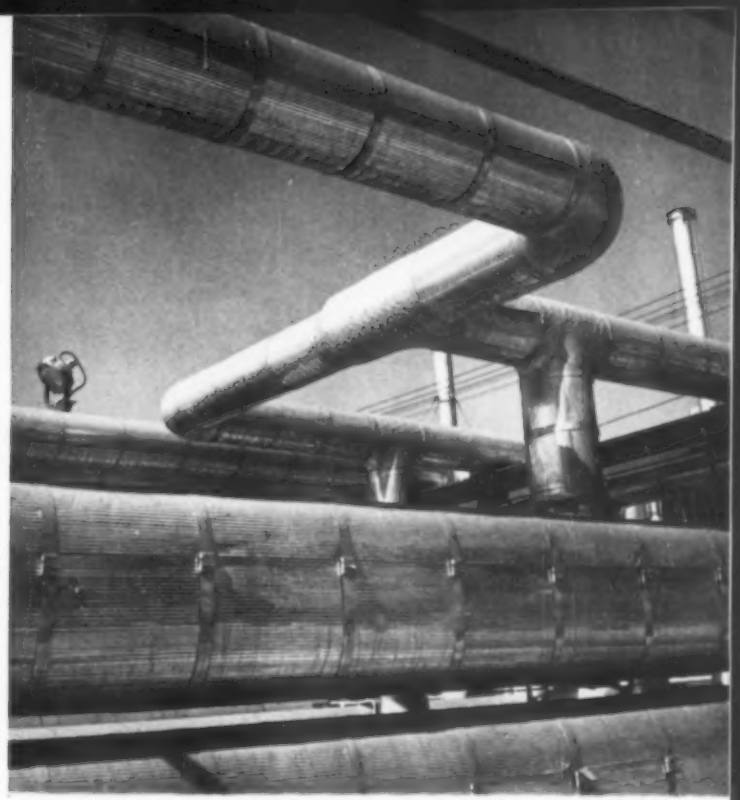
Before the Heat-Pack was installed, the maximum speed at which the slashers could be run constituted a bottleneck for overall plant production. Oversized cans had been installed and other devices had been used in an attempt to increase the slasher speed, but without satisfactory results.

Packaged Unit

The Heat-Pack was installed between the size box and the first can without moving or relocating any of the originally installed machin-

How Olin Mathieson Uses Childers Jacketing For Insulated Lines

Jacketing problems at new plant ranged from covering tall towers to irregularly-shaped heat exchangers. Read how aluminum jacketing solved these problems.



More than 244,000 square feet of Childers .006" Jacketing and 35,000 square feet of heavy weight Childers Jacketing was used in this new Olin Mathieson plant to weather-proof insulated lines, towers and vessels. Close-up above shows how aluminum jacketing was applied with strapping and seals.

Low first-cost, long life, and easy installation were the big reasons Olin Mathieson Chemical Corporation used Childers Aluminum Jacketing for outdoor insulated lines in their new Brandenburg, Ky., petrochemical plant.

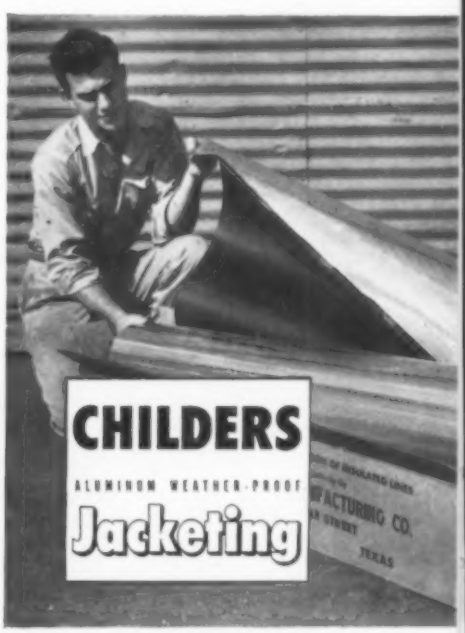
Mathieson used Childers standard weight Jacketing on their insulated lines. Heavier weights of Childers Jacketing were used on high towers and vessels where a stiffer material was needed to support the vertical weight of the jacketing.

Engineers report that Childers Jacketing is inexpensive to apply. It comes in easy-to-handle rolls 4 ft. wide and 100 ft. long. Just pliers and a pocketknife are the only tools needed to apply. And because the jacketing is aluminum it needs no painting . . . stays clean and new looking even after years of service.

Childers Jacketing is easily removable, too. Just remove the strapping and jacketing can be taken off for inspection of the lines. Then same jacketing can easily be put back on the insulated line.

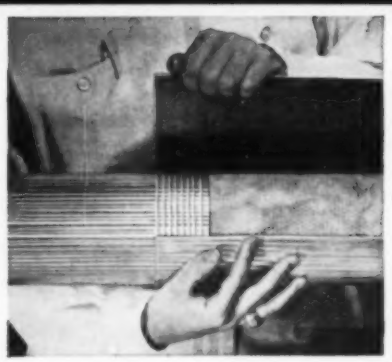
Immediate shipment from our large factory stocks can eliminate costly delays in construction or plant improvement schedules.

Try this low-cost protection in your plant. Write today for engineering data and information. You can order a 400 sq. ft. roll to test on one of your insulated lines. No obligation. Address: Childers Manufacturing Company, Department IP-3, 3620 West 11th St., Houston, Texas.



Each roll of Childers Jacketing comes individually packed like this in a heavy corrugated carton. Rolls are 4 ft. wide. With moisture barrier attached they are 100 ft. long; without moisture barrier they are 200 ft. long. They are well protected for field storage if kept dry. Individual boxes are light enough for one man to handle. (Adv.)

Only Childers Jacketing Offers *LAP-SEAL*



LAP-SEAL **is a series of eight ribs rolled into the underlapping edge of the jacketing.**

LAP-SEAL **makes more positive weather seal.**

LAP-SEAL **saves labor—2" ribbed edge eliminates measuring for circumferential lap.**

LAP-SEAL **(patent applied for) is an exclusive "plus" available on all Childers Jacketing at no extra cost.**

ONE OF THE GARLOCK 2,000

SERVICE REPORTS ON THIS PACKING EVEN SURPRISED US!

Typical Service Reports on Lattice Braid Asbestos Packing with Teflon:

- Outlasted another Garlock Style 10 to 1 against blending waxes and steam for cleaning.
- Outlasted competitor's packing 38 to 1 against caustic at 325°F., 50 psi.
- Outlasted other packings 3 to 1 against cold water.

Don't take our word for the greater strength, longer life of LATTICE BRAID with Teflon—try an initial order of 10 or more feet today. The Teflon core and impregnation resist everything except molten alkali metals and some freons.

And, remember, LATTICE BRAID with Teflon is only one of the Garlock 2,000 . . . two thousand different styles of packings, gaskets, and seals to meet every conceivable need. It's the *only* complete line available. It's one reason why you can expect unbiased recommendations from your Garlock representative. Call him, or write for booklet 131.

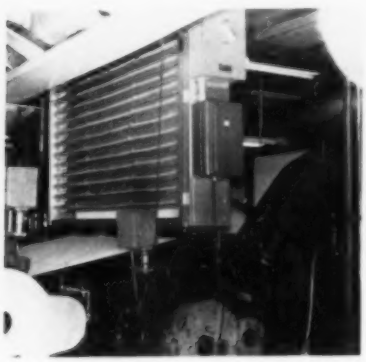
THE GARLOCK PACKING COMPANY,
Palmyra, New York

For Prompt Service, contact one of the 30 sales offices and warehouses throughout the U.S. and Canada.

GARLOCK

Packings, Gaskets, Oil Seals, Mechanical Seals, Rubber Expansion Joints

ery. Because the Heat-Pack is a complete package, including not only the Chromalox Far-infrared electric radiant heaters, but also all of the necessary mechanical accessories and electrical control equipment all completely assembled and wired together before shipment to the user's plant, the installation is very simple and inexpensive.



Heat-Pack provides a very intense source of Far-infrared radiant heat which does a most effective job of drying the yarn immediately after it leaves the size box and before it hits the first can on the slasher. Because the initial drying is done while the yarn is suspended in air and not in contact with a cylinder, the yarn is not flattened, adjacent ends do not stick together, and in general a better quality warp results.

Provision is made for automatically removing the intense heat from the yarn if the slasher is stopped. Also, an input controller is provided for controlling the temperature and the effective rate of drying. Tests and measurements on production installations have indicated that the operating cost of Heat-Pack is competitive with the operating cost for steam if the electric energy cost is in the range of approximately ¾ of a cent per kilowatt hour.

In addition to slasher applications, this equipment has been successfully applied to drying boxes, tenter frames, and for such applications as heat setting synthetics and curing resins.

Heat-Pack is manufactured by Southern Machine Products, Inc., and engineering sales are handled by Ranson, Wallace & Co., Charlotte, North Carolina.

This WROUGHT IRON PIPE installation has SAVED the cost of 4 replacements... *and it's still going strong*

In 1941, the Plant Superintendent of Hampden Color & Chemical Company, Springfield, Massachusetts, started looking for an answer to a recurring piping failure problem.

His maintenance records charted the life-span of the piping material he had been using for the dry-sprinkler-pipe system at about three years. There was no question about the severe corrosive conditions that constantly threatened the service. The system, located on the ceiling of the dye room, collected dye dust which contained a large percentage of sodium chloride. Condensation created by the operation in the dye room kept the pipes wet. The result was a weak "salt bath" which caused outside corrosion.

After careful investigation of performance records in services where corrosive conditions were similar to those affecting his sprinkler-lines, the Plant Superintendent selected wrought iron pipe for replacement. The first quantity was installed in 1941, followed by a greater tonnage in 1943.

The installation was recently checked. Records reveal that the wrought iron pipe has given trouble-free service, and is still in good condition.

The economies are clear. Figured in years of service, the wrought iron pipe has already saved the cost of 4 to 5 replacements. Added to this are the benefits of uninterrupted operation that means greater plant efficiency.

The economical performance of wrought iron paved the way for extended use of the material by Hampden Color & Chemical Company. Domestic water lines, boiling tank piping, and more recently, a new smokestack, are all safeguarded with time-tested wrought iron.

Our bulletin, *Piping for Permanence*, tells the story of wrought iron, why it resists corrosion longer, and illustrates the many applications where it is serving and saving. Write for your copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. International Division: New York, N. Y.

Available in Canada and throughout the world.

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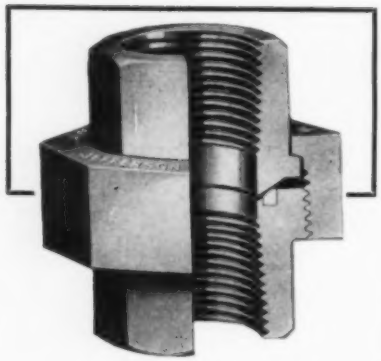
WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY STEEL PRODUCTS



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. . . with features which assure longer, more economical, dependable performance . . . through:

. . . better, stronger material (55,000# p.s.i. air furnace malleable iron.

. . . ability to guarantee satisfaction under 500# p.s.i. steam and oil at 550°F, or 2000# p.s.i. non-shock cold W.O.G. in sizes from ⅛" to 2".

. . . seats cut from specially drawn brass tubing, accurately ground . . . not just machine-finished. (All-iron seats also available.)

. . . rigid inspection and testing for utmost protection in user service.

. . . such inherent high quality throughout as to offer complete satisfaction under conditions where higher priced steel unions might otherwise be necessary.

. . . utmost in quality and performance as to have the recognition and approval of the Underwriters' Laboratories.

Make Jefferson your source of supply also for 90° and 45° Union Elbows, Union Tees and Flange Unions. The complete line includes also 150#, 250# and 300# unions and union fittings. Ask for full details.

JEFFERSON UNION CO.

45 Fletcher Ave.,
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JEFFERSON
sets the standard in many well-known plants.

NEW EQUIPMENT

Circle Code Number on Page 17 Return Card

Abrasion-Resistant Piping for Mtls. Handl. Systems

Ashcolite metal pipe with sleeve couplings and a complete line of piping accessories is being marketed by Allen-Sherman-Hoff Co. for hydraulic or pneumatic materials handling systems.

This piping offers advantages of (1) high resistance to wearing action of abrasive materials, (2) uniform composition of pipe, (3) true dimensions of pipe diameter and wall thickness, and (4) a simplified coupling arrangement which provides ease of installation and maintenance.

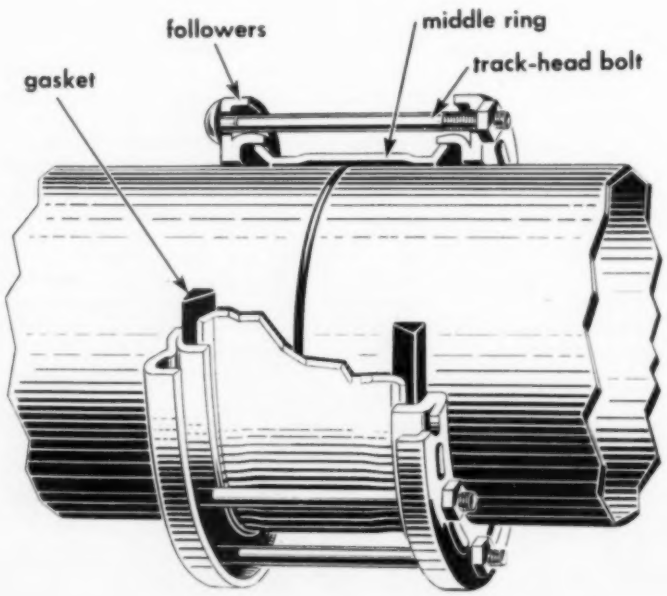
Piping arrangements for materials handling systems are easily made from sections of plain-end pipe joined by a gasketed sleeve coupling, as illustrated. Adaptors, similar in design to the sleeve coupling, are used to connect the pipe to flange assemblies of all types, such as flanged pipe, fittings, machinery, etc. Other accessory items for the construction of piping systems include: blind flanges to close open ends of pipe runs, and bend fittings specially designed to minimize abrasive wear and friction loss.

The Ashcolite metal is composed of a chrome-iron alloy cast by the sand-spun process. This results in pipe with hardness ranging from 280 to 340 Brinell.

The standard sleeve coupling illustrated permits quick and easy pipe connection. When the bolts are drawn up, gasket pressure against the pipe produces a tight but flexible seal which permits a 4° angle of deflection per connection. Sections of pipe to be joined can thus be simply aligned. The sleeve type coupling also makes it relatively easy to rotate the pipe after installation to obtain uniform distribution of wear.

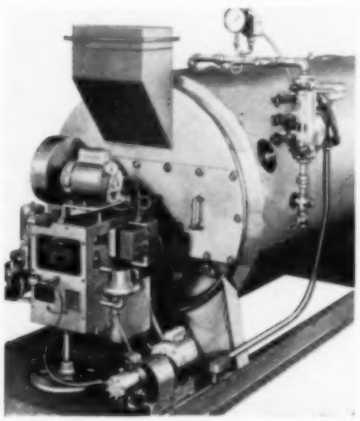
Ashcolite pipe is available in sizes from 4 to 12 in. I.D. and in lengths up to 16 ft. Use of 16 ft stock lengths for straight runs reduces the number of joints and, in turn, reduces installation time and friction loss.—THE ALLEN-SHERMAN-HOFF CO., 259 E. Lancaster Ave., Wynnewood, Pa

For More Free Data — CIRCLE B-1 on the Handy Return Card — Page 17



Packaged Boiler Line

The new "Red Band" line of Scotch type "Steamboilerplants" has been announced by Eclipse Fuel Engineering. Sizes range from 12 to 125 hp for gas or oil firing, or combined fuels, for every process heating requirement.



This new line has been developed especially for the economy minded steam user who needs a dependable source of steam under all his operating conditions and wants the added convenience of a self-contained unit ready to operate when received. All the necessary valves, controls and boiler trim are mounted and internal piping and wiring is completed. When electricity, steam, water and fuel lines are hooked up the boiler is ready to produce steam. Burner equipment is controlled automatically by steam pressure with minimum supervision by the operator.

An important design feature is the larger internal furnace with 300% greater combustion volume to permit high heat output without strain or danger of heat cracks. Maximum heat conduction and convection is provided by 2 in. diameter tubes. — ECLIPSE FUEL ENGINEERING CO., Rockford, Illinois.

For More Free Data — CIRCLE B-2 on the Handy Return Card — Page 17

High Pressure & Temperature Y-Type Pipe Strainers

Six sizes of carbon moly steel strainers have been added to Armstrong's present line of cast semi-steel strainers.

The new Y-type pipe strainers for oil, gas, air, water and steam lines are suitable for pressures to 900 lb and temperatures to 900 F. Maximum

Care and fitness of

COOLING TOWERS

From the first breath of air that passes through the fan of your Marley cooling tower, there's a specialist standing by to see that all goes well. He's a Marley Field Service Engineer—a factory-trained specialist with a most comprehensive knowledge of construction, operation and maintenance.

A Marley Field Service Engineer is on the scene whenever a new Marley cooling tower is started up. He "checks its pulse" . . . takes its temperature . . . sees that every vital component is functioning properly. At regular intervals, he will call back to give the tower a periodic check-up and to give you professional assistance on tower operation and maintenance. And of course, Marley Field Service Engineers are always available for consultation on any cooling tower problem, regardless of the type or make of tower.

This continuous close contact insures the continuance of "like-new" performance of your cooling tower. Like Marley design, engineering and research, Marley's Field Engineering Service exists for the sole purpose of providing you the most efficient and economical water cooling possible. For information, or for technical brochures on the care of cooling towers, write today or call your nearest Marley Sales Engineering Office.

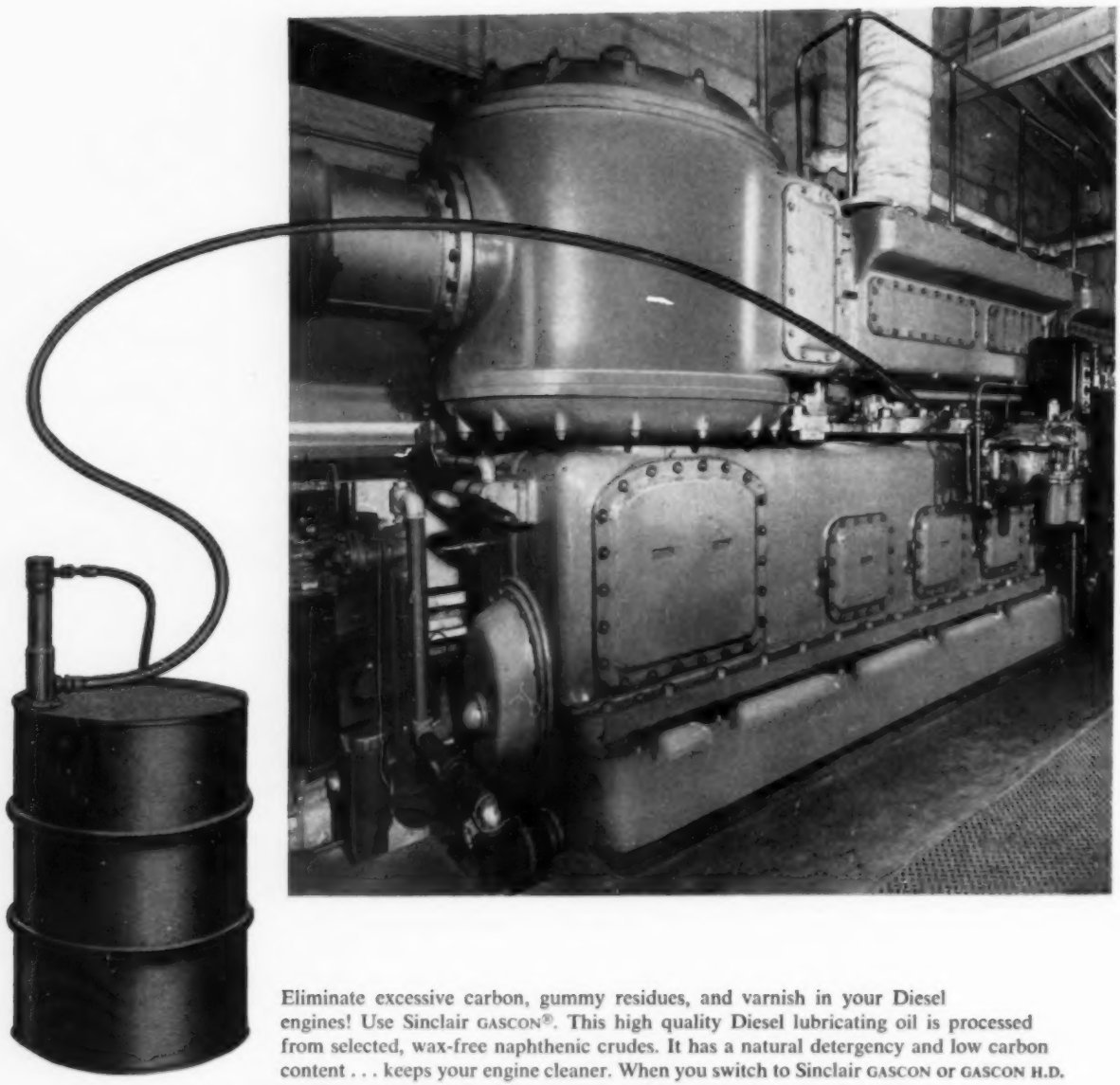
MARLEY

Founder Member of Cooling Tower Institute

The Marley Company

Kansas City, Missouri

Check Carbon!



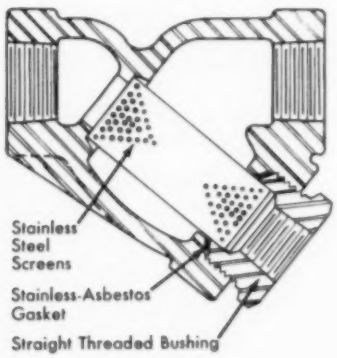
Eliminate excessive carbon, gummy residues, and varnish in your Diesel engines! Use Sinclair GASCON®. This high quality Diesel lubricating oil is processed from selected, wax-free naphthenic crudes. It has a natural detergency and low carbon content . . . keeps your engine cleaner. When you switch to Sinclair GASCON or GASCON H.D. you know that pistons, rings, valves and exhaust ports stay free from carbon, gums and varnish.

No matter what design of engine you're operating, you'll be 'way ahead with Sinclair's complete line of Diesel lubricants. Contact your local Sinclair Representative now for full details, or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N.Y.

SINCLAIR GASCON OILS

pressure at 100 F is 1800 psig.

The strainers are available in ½" through 2" sizes, either screwed or socket weld. Sizes 1¼", 1½" and 2" have bolted retainer plates. Smaller sizes have straight thread screwed bushings.



Stainless steel screens are standard, either .045" diameter holes, 226 per sq in. or 24 x 110 wire mesh. Other screening material is available to meet most requirements.

Design features include a stainless-asbestos gasket which is locked in between the body and the base of the bushing thus eliminating any chance of blowout.

List prices start at $13.00 for the ½" moly steel strainer with screwed ends. — ARMSTRONG MACHINE WORKS, Three Rivers, Mich.

For More Free Data — CIRCLE B-3 on the Handy Return Card — Page 17

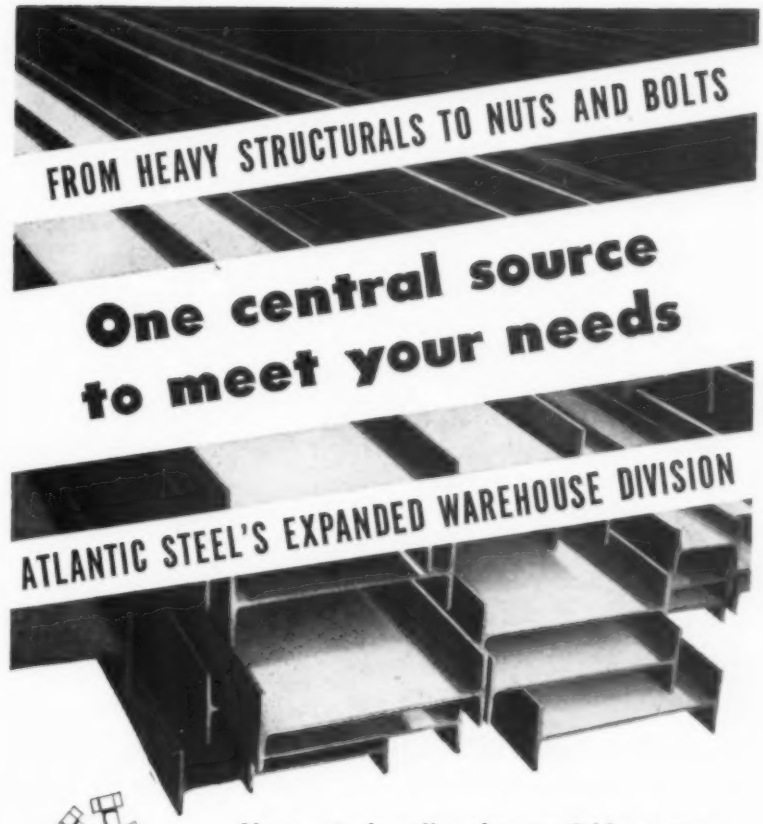
Automatic Absorption Refrigeration Machine

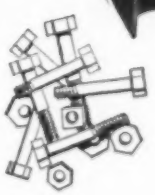
A new line of large capacity automatic "pushbutton" absorption refrigerating machines which produce chilled water from steam has been announced by Carrier Corporation.

Available in a full range of sizes from 100 to 700 tons, the absorption units are used in air conditioning and process cooling systems. The machines have no major moving parts, and employ plain water as the refrigerant. They can be controlled by a time clock, thermostat or pushbutton.

The units will adjust automatically from full capacity down to zero load, and back to full load again, with little loss in efficiency.

Overloading will not hurt the Carrier absorption machine. In the event that cooling beyond design capacity is required, the machine will con-


FROM HEAVY STRUCTURALS TO NUTS AND BOLTS
One central source to meet your needs
ATLANTIC STEEL'S EXPANDED WAREHOUSE DIVISION



Now a single call makes available to you one of the South's largest varieties of steel warehouse products: CARBON AND STAINLESS STEEL BARS, SHAPES, SHEETS, AND PLATES; LIGHT AND HEAVY STRUCTURAL SECTIONS (UP TO 65′ LONG); COLD-ROLLED BARS; MANY COPPER PRODUCTS; AND THE NEWEST ADDITION TO OUR LINE—ALUMINUM BARS, SHAPES, RODS, SHEETS, PLATES, AND TUBING.

This larger selection is available to you now because our Warehouse Division's storage space has been increased 50%. More than 100,000 square feet of warehouse space hold ready for immediate shipment the items you need.

Join the thousands of businesses large and small who depend on Atlantic for service.

AMERICAN STEEL WAREHOUSE ASSOCIATION — BETTER DISTRIBUTION

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WAREHOUSE DIVISION

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"THIS LUBRICANT CUT BEARING REPLACEMENTS OVER 40%"

says—HANOVER BUILDING SUPPLY CO. of Hanover, Pa.

"Before using LUBRIPLATE, we replaced the wheel bearings in over 50% of our trucks each year. Since using it, bearing replacements have dropped to less than 10%. We have also been able to increase periods between chassis lubrications from 500 to 2000 miles. We are very happy over our change to LUBRIPLATE, and heartily recommend it to fleet operators interested in saving money."

HANOVER BUILDING SUPPLY CO.
C. O. Albright, Pres.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

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LUBRIPLATE H.D.S. MOTOR OIL . . . THE OIL THAT NEEDS NO ADDITIVES

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

tinue to operate, delivering additional tons of refrigeration, at a higher than design temperature level.

Due to the minimum number of moving parts and the light weight of the equipment, these quiet and vibrationless machines can be installed on rooftops or upper-floor locations in buildings, etc. They can be placed high on the steelwork of an industrial plant close to the process where cooling is required. The machine is also ideally suited to outdoor installation.

The machine is particularly economical to operate wherever a low-cost source of heat, such as natural gas, is available to provide steam. Low pressure steam may also be obtained from back pressure turbines or from exhausts from various processing operations. This waste steam may be used to provide chilled water at little operating cost.

Although steam is most generally employed, any hot fluid, such as hot water, oil or chemicals, may be used to generate cooling in this Carrier unit.

The new design eliminates many of the major service lines and all of the external auxiliary piping normally assembled at the job site, thus substantially reducing the time and cost of installation. — CARRIER CORPORATION, Syracuse 1, New York.

For More Free Data — CIRCLE B-4 on the Handy Return Card — Page 17

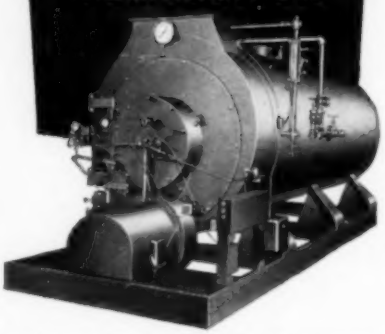
Water Pressure Reducing Valve

A newly designed water pressure reducing valve that has an unusual combination of engineering features has been added to the Leslie line of regulators and controllers.

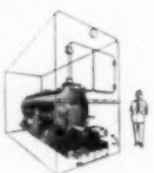
The new classes W-1 and WL-1 valves for water and other non-corrosive liquids are known as the Leslie "Hi-Flo" Regulators and have capacity-regulation features that no other regulator offers to provide a constant flow at reduced pressure under wide variations and surges in inlet pressure. They provide 50% to 100% greater capacity than other regulators, according to tests conducted by the manufacturer.

Some of the construction features of this reducing valve are—Large bowl construction and long travel diaphragm that gives full flow; fully balanced for smooth throttling action; high strength balancing dia-

STREAMLINED INSTALLATION SAVES { SPACE COSTS TIME with CYCLOTHERM CYCLONIC COMBUSTION



Cyclotherm Steam and Hot Water Generators
18 to 500 hp.
15 to 200 psi.



Cyclotherm Cyclonic Combustion enables Cyclotherm to be as much as ⅓ smaller than other packaged units. More space is freed for productive use. Cyclotherm requires minimum boiler room space. Can be placed in working area. Cyclotherm arrives completely assembled and factory tested . . . needing only 5 connections for installation.

Cyclotherm servicemen will assure efficient, economical operation by instructing your personnel. Are available at any hour ...any day. Cyclotherm guarantees a minimum 80% efficiency in oil and/or gas. Maintenance savings amount to as much as 50%.

For complete details as to how you can produce steam at lowest costs, write today for Cyclotherm's free booklet.

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CYCLOTHERM
Steam & Hot Water Generators

Cyclotherm Division
National-U. S. Radiator Corp.,
2226 E. First Street,
Oswego, New York

phragm to eliminate less positive seals; and, renewable trim with interchangeable fit.

These new Leslie "Hi-Flo" valves are available in ½, ¾, 1, 1¼, 1½ and 2" compound treated cast iron bodies. Inlet pressure range is 10—250 psi, 180 F with reduced pressure ranges of 5—30 psi or 25—80 psi. Minimum pressure drop is 5 psi.—LESLIE CO., 230 Delafield Ave., Lyndhurst, N. J.

For More Free Data — CIRCLE B-5 on the Handy Return Card — Page 17

Lightweight Pneumatic Cup Wheel Grinder

Introduced as the lightest, most powerful 6" pneumatic cup wheel grinder on the market, Cleco Air Tools' new 2000 Series lists several design characteristics aimed at permitting the operator to do a faster, yet easier, job, and to increase the grinder's uesful life.

Weighing 10½ lb, without guard, the grinder is only 7⅝" high, and owes most of its reduced weight to a magnesium housing and redesigned rotor.

The Cleco grinder has a large capacity filter screen for the air passage leading over an automatic oiler and oil chamber providing positive lubrication for moving parts, including rotor blades. A leakproof valve system is of a simple type design coupled with an "O" ring.

The governor, with its separate

HALF the world is half asleep! Men who could be making *twice* their present salaries are coasting along, hoping for promotions but doing nothing to bring themselves forcefully to the attention of management.

They're *wasting* the most fruitful years of their business lives . . . throwing away thousands of dollars they may never be able to make up. And, oddly enough, they don't realize—even remotely—the tragic consequences of their failure to forge ahead while time is still on their side.

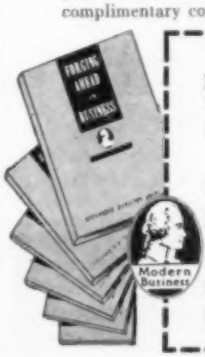
These are the men who are unknowingly headed for the frustrations and the disappointments of mediocrity. They'll go part way up the ladder and down again by the time they're fifty years old. They'll be executive material in their twenties and thirties—and clerks in their fifties. They'll have high hopes for themselves and their families while they're young; but only struggling, skimping and regret later on when their earning power should be at its height.

Send for Your Free Copy of "Forging Ahead in Business"

If you want to discover how to succeed while you are still young—if you want to avoid the heartbreak of failure in later years—send today for "*Forging Ahead in Business*" . . . one of the most practical and realistic booklets ever written on the problems of personal advancement.

Here you will find—not a "pep talk," not an academic lecture—but cold, hard *facts* on how to improve your position and increase your income. You will be told what the qualifications of an executive are in today's competitive market . . . what you must *know* to make $15,000, $20,000 or more a year . . . what you must *do* to accumulate this knowledge.

"Forging Ahead in Business" was written for mature, ambitious men who seriously want to get down to bed-rock in their thinking about their business future. If you feel it is meant for you, simply fill in and return the coupon below. Your complimentary copy will be mailed to you promptly.



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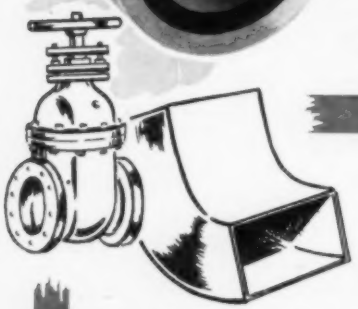
against
Corrosion and Abrasion!

for PIPES...
VALVES...
TANKS...DUCTS
...VESSELS...etc.



Rubber, Neoprene and Polyvinyl Chloride LININGS & COATINGS

Are you handling acids, bases, salts or other hard-to-handle chemicals or fumes in your production? We coat pipe-lines, tanks, valves, ducts, etc., for longer, more efficient operation. Compounds can be made conductive or non-conductive, soft or hard, suitable for high or low temperature operations.

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CHARLOTTE, NORTH CAROLINA

oiler, has a ball type center. It is adjusted through a rotor shaft hole, eliminating the necessity of taking off covers or disassembling the grinder.

For operator convenience, the grinder has a three-position dead handle. The snap handle is controlled by the operator's finger tip, and can be worked easily while the operator maintains a solid grip.

The snap handle is interchangeable with a wing nut throttle, and can be alternated without removing the grinder's handle. Only one casing is used.

The Cleco 2000 grinder can use either the straight type abrasive wheel with the guard attached to the grinder body, or the flanged cup abrasive wheel with the revolving cup guard. The grinder-attached guard is removable without affecting the motor assembly.—CLECO DIVISION, Reed Roller Bit Co., Houston, Texas.

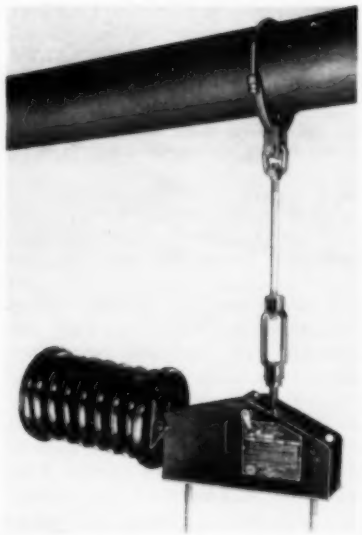
For More Free Data — CIRCLE B-6 on the Handy Return Card — Page 17

Pipe Support Hangers

An extended line of Model R Constant Support Hangers with load capacities from 31 to 32267 lb has been announced by Grinnell.

Incorporated in these new designs are the most-sought features called for in pipe suspension. These hangers permit expansion and contraction of piping systems, through heating and cooling cycles, without developing dangerous stresses.

The new line offers increased supporting forces or greater travel within a given frame size to provide any load or travel the customer may require. There are nine frame structures available. Two of them are completely new. The field adjusting bolts have been relocated for easy load readjustment. The bearings



have been relocated in the frames, permitting the main pivot to rotate and carry the load indicating pointer. Four of the new frame designs require less head room and permit installation closer to other structures. To simplify erecting new piping, new stops are provided to rigidly lock the hanger in a fixed position. These stops are also used during hydrostatic tests. — GRINNELL COMPANY, INC., Providence, Rhode Island.

For More Free Data — CIRCLE B-7 on the Handy Return Card — Page 17

High Capacity Impulse Steam Trap

Yarnall-Waring Company has added to their line of Impulse Steam Traps a new No. 40 Series, specially designed with high capacity to handle heavy condensate loads. Capacities are approximately two to three times that of the same size standard No. 60 Series Yarway Impulse Steam Traps.

Outstanding features include high capacity at all pressures up to 600 lb, complete stainless steel body and internal parts, excellent low pressure operation (no orifice change or adjustment is required 0 to 600 lb), steam temperature condensate discharge characteristics, freeze-proof operation against back pressure up to 50%, ideal for applications where dirt and scale are a problem.

Typical applications of the Series 40 Impulse Trap are on unit heaters, heating coils, storage water heaters, kettles, large fuel oil preheaters,

SPEEDHEATERS . . . Gas, steam and hot water types. Ideal for uniform space heating with rapid air circulation.
INDUSTRIAL HEATERS . . . The steam unit heater for industrial plants, warehouses, garages . . . floor, wall, and ceiling mountin . . . adjustable nozzle outlet.
SILENTVANE FANS . . . Non-overloading horsepower characteristics with stable, quiet operation.
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For complete application service, call your Consulting Engineer or your nearest Sturtevant Division Sales Engineer . . . or write Westinghouse Electric Corporation, Sturtevant Division, Dept. 21-B, Hyde Park, Boston 36, Mass.

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dryers, evaporators, large platens, autoclaves, heat exchangers, etc.

The Series 40 traps are now available in ½" and ¾" sizes. Larger sizes will soon be available.—YARNALL WARING CO., 116 Mermaid Ave., Philadelphia 18, Penna.

For More Free Data — CIRCLE B-8 on the Handy Return Card — Page 17

Installation Simplified in Re-Designed Sprocket Rim

In a new design of the Babbitt adjustable sprocket rim with chain guide, spider and rim have been incorporated into one casting. This simplified construction greatly facilitates installation, and at the same time contributes greater strength to the unit.

Typical uses of the Babbitt device are found wherever inaccessible valves require chain wheel operation. Field reports include installations where valve wheels control flow of steam, water, gas, oil and other materials, as well as on hoppers, chute gates, sluices, silos, high-up windows and skylights, etc. Response is said to be quicker in valve opening and closing than with direct hand-on-wheel operation, because a continuous pull on the sprocket chain eliminates waste motion.

Full details on the improved Babbitt Adjustable Sprocket Rim with Chain Guide, together with recommendations on specific installations, are available. Rims are available for prompt delivery in a range of ten adjustable sizes to fit all valve wheels 2 to 30 in. in diameter. All valve makes, with either rising or non-rising stems, are accommodated. — BABBITT STEAM SPECIALTY COMPANY, New Bedford, Mass.

For More Free Data — CIRCLE B-9 on the Handy Return Card — Page 17

Butterfly Valve Design

A new series of butterfly valves announced by Keystone Tool are supplied with threaded bolt holes rather than the drilled holes normally supplied on valves designed for use between flanges. Two sets of short bolts or cap screws are used to connect the valve to the flanges. With the valve in closed position, this design permits the flange on either side of the valve to be disconnected, with full operating pressure held in the line on the opposite side. The necessity of "bleeding down" the entire line when a portion of it must be disconnected for cleaning or other purposes is thus eliminated.

Like all other Keystone Valves, the "Lug Type" valves require no gaskets between flanges, the resilient

seat serving both as a seat and a seal between valve and flanges. The valve is non-lubricated, self-cleaning and has self-indexing handles that lock in open or closed position. The valves are manufactured in sizes from 2" through 12", for use between standard ASA 125 lb or 150 lb flanges, as specified. The valves are designed for use on vacuum or pressure lines handling liquids, dry materials or slurries, and are furnished in steel or available corrosion-resistant materials.—KEYSTONE TOOL CORP., Box 6716, Houston, Texas.

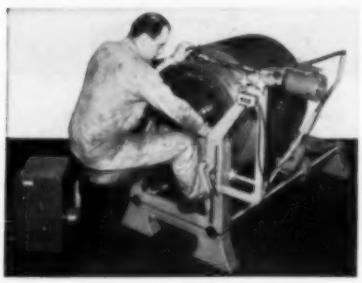
For More Free Data — CIRCLE B-10 on the Handy Return Card — Page 17

Equipment, Supplies & Methods (Continued)

Shop-Type Undercutter

This versatile improved Shop-Type Mica Undercutter will handle not only the large armatures illustrated but is also practical for medium and small armatures.

Adjustments are provided to compensate for such things as shafts of different diameters at either end, skewed commutator slots, etc. Refinements include a dust collector for quick removal of mica dust, glass shield and light for operator comfort, etc. — THE MARTINDALE ELECTRIC COMPANY, 1334 Hird Ave., Cleveland 7, Ohio.



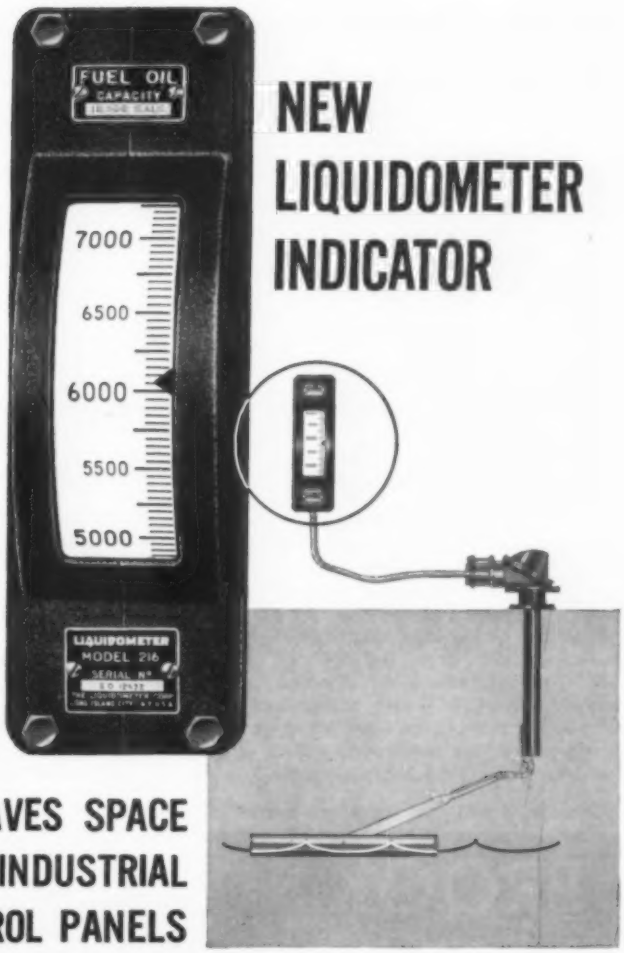
For More Free Data — CIRCLE B-11 on the Handy Return Card — Page 17

Water Level Gauge for Pressures up to 900 psi

Featuring five larger ports for maximum visibility, the new Model MP-900 Diamond "Multi-Port" Gauge is recommend for pressures up to 900 psi; vision length is 12". The larger ports are made possible by the lower pressure operation which renders design limitations much less severe. This new gauge has either end stems or flanged connections and is applicable to both existing and new boilers.

Development of this new model was prompted by the exceptional performance of the high pressure (3000 psi) "Multi-Port" which has been in continuous high pressure central station service for more than three years. The basic design principle is the same . . . a series of round ports with small individual glasses and mica and Diamond Bi-Color. Advantages are:

(1) Very much lower maintenance due to simplicity of construction and the rapid and easy replacement



NEW LIQUIDOMETER INDICATOR

SAVES SPACE ON INDUSTRIAL CONTROL PANELS

Twenty-inch dial in 3 x 10¼" case permits close readings

The new Liquidometer Model 216 Indicator gives the plant engineer a reliable, automatic reading of storage tank contents. Available in either vertical or horizontal design, the compact and highly readable Model 216 Indicator makes possible multiple installations on crowded control panels.

Teamed with Liquidometer's time-tested hydraulic transmission gaging system, the new indicator provides instantaneous remote indication of liquid levels—automatically. No outside power source is required. Virtually any liquid may be measured, and the indicator can be located up to 250 feet from the tank.

Engineered for dependability, the Liquidometer gaging systems highlight these design features:

- Maintenance free
- Integral temperature compensation
- Ease of installation—requires only one 2" diameter tank opening
- Safety—all gages Underwriters approved for hazardous liquids

For further details on the new Model 216 Indicator, write Dept. F for Bulletin 532.

LIQUIDOMETER INSTRUMENTS

THE LIQUIDOMETER CORP.
SKILLMAN AVENUE AT 36th STREET
LONG ISLAND CITY 1, NEW YORK

Equipment, Supplies & Methods (Continued)

of the inexpensive small mica, glass and gasket elements (done without removing gauge from the boiler).

(2) Greater pressure and thermal stability because of design principle using small round ports. Long warming up period not required.

(3) Excellent readability because ports stand out as brilliantly colored beacons. Under Diamond Bi-Color Illumination, green is water, red is steam. Water level is always where colors meet.

Experience has shown that no difficulty arises from interrupted vision because the Bi-Color feature indicates correct water level position at all times. When the level is between ports, water filled ports below show green and the steam filled ports above show red.—DIAMOND POWER SPECIALTY CORPORATION, Lancaster, Penna.

For More Free Data — CIRCLE B-12 on the Handy Return Card — Page 17

Security Fiberglas Panel

Suitable for glazing security windows, small unsupported skylights, truck side panels housing dangerous equipment, etc., new fiberglass panel by Resolite offers increased strength and rigdity.

In the new panel design, a sheet of expanded metal lath is embedded in a layer of 3 oz fiberglass mat impregnated with polyester resin.

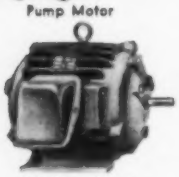
Standard sheet is produced in the colorless, semi-clear resin, which is

translucent but not transparent. Standard length is 8 ft, with 1, 2, 3 or 4 ft widths. Special sizes and colors can be supplied. Sheet is also supplied in fire-retardant or "self-extinguishing" resin. — RESOLITE CORPORATION, Box 531, Zelienople, Penna.

For More Free Data — CIRCLE B-13 on the Handy Return Card — Page 17

BROOK MOTORS

Pump Motor



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Brook motors are available from warehouses at Chicago, Jacksonville, Fla., Jersey City, N. J., Dallas, Los Angeles, Memphis, Tenn., Portland, Ore., Salt Lake City, Utah, San Francisco, Seattle, Savannah, Ga., and other major distributing points.

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PVC Plastic Pipe

Ryertex-Omicron PVC plastic pipe, which can be sawed, threaded, solvent welded and heat welded, is available in Schedule 40 and Schedule 80 pipe sizes. This is a rigid non-plasticized polyvinyl chloride pipe also suitable for use as a structural material.

The type to be marketed by Ryerson has no additives or fillers, which insures maximum resistance to attack by various acids, alkalies, salt solutions, alcohols and other chemicals. It will not support combustion, and this characteristic alone makes it particularly desirable for many installations in which the use of plastic materials has heretofore been barred or restricted. Pipe fittings and valves of the same material will also be available. — JOSEPH T. RYERSON & SON, INC., Box 300, Cincinnati 14, Ohio.

For More Free Data — CIRCLE B-14 on the Handy Return Card — Page 17

New Plants — Expansions

√ **Manufacturing Plants**
√ **Utility Plants**
√ **Large Service Plants**

Highlights for February, 1956

South Atlantic States

58,000 sq ft of manufacturing and office space is planned for the newly merged company of **McDonough Power Equipment, Inc.,** at **East Point, Georgia.**

General Electric constructing $100,000, 15,000 sq ft **Charlotte, N. C.,** warehouse for the assemblies and components sales section . . . $250,000 clothing factory in **Hendersonville, N. C.** for **Mountain Top Co.** . . . **Kinston, N. C.** $113,000 plant for **Swift and Co.** of Chicago scheduled for completion in April . . . **Shorewood Furniture Inc.** constructing production plant in **Lincolnton, N. C.** for modern and early American upholstered living room furniture . . . $175,000 **Motor Bearings and Parts Co.'s** offices, warehouse and machine shop will be occupied in May in **Raleigh, N. C.**

$2,000,000, 200,000 sq ft textile mill of **Landrum, S. C.** to be called **Landrum Mills** . . . **Seneca, S. C.** 26,000 sq ft addition to **Jantzen, Inc.** plant . . . **Spartanburg, S. C.** ceramics plant of **Kohler Co.** to cost $5,000,000.

Coronet Manufacturing Co. has moved into its $250,000, 53,000 sq ft manufacturing plant at **Bristol, Va.** . . . $220,000 **Tennessee Bristol Electric System's** building completed at **Bristol, Va.** . . . **Haskell Chemical Co.** constructing larger building and adding synthetic resins to production list in **Dumbarton, Va.**

Early 1957 operation expected for the **Stuart, Va.,** division of **Easthampton Rubber Thread Co.,** subsidiary of **United Elastic Corp.** . . . $5,000,000 **Suffolk, Va.** branch factory of **Nestle Co., Inc.** will be built on a 70-acre site . . . **United States Flat Glass Corp.** constructing **Winchester, Va.** $16,000,000 plant consisting of three units, two of which will begin production in the Spring, with the third being completed late in the year.

Vanadium Corps. of America expects production late in the year in its multi-million dollar ferro-alloys plant at **Dillonvale, W. Va.** . . . $120,000,000, 220,000-ton aluminum reduction plant will be begun in April by **Aluminum & Chemical Corp.** at **Ravenswood, W. Va.** — this is a part of the corporation's $280,000,000 expansion program. . . . $65,000,000 expansion and improvement program of **Wheeling Steel Corp.** planned for installations at **Steubenville and Yorkville, Ohio and Benwood, W. Va.**

East South Central

$300,000 **Dothan, Ala.** paper fiber fabrics plant will be constructed by **E. W. Twitchell, Inc.** on a 40-acre site.

Plans are underway for construction of **General Shoe Co.'s Frankfort, Kentucky,** $450,000 plant.

$350,000 New County port terminal is planned for construction at **Greenville, Miss.**

Peerless Woolen Mills will erect a $250,000 sq ft textile plant on 185-acre site at **Cleveland, Tenn.** . . . $250,000 **Jonathan Logan** garment plant planned for **Fayetteville, Tenn.** . . . **Gulf Refining Co.** is planning $100,000 pipeline distribution terminal at **Knoxville, Tenn.** . . . **Victor Chemical Works** will add to its **Nashville, Tenn.** plant a $150,000 building which will produce chemical-sodium hypophosphite. . . . **Tennessee Products and Chemical Corp.** is constructing $2,500,000 **Rockwood, Tenn.** alloy plant.

West South Central

$100,000 addition to **Virco Manufacturing Co.** planned for **Conway, Ark.** . . . **Wells-Lamont Corporation,** Chicago, is planning 31,000 sq ft **Dermott, Ark.** glove manufacturing plant. . . . Fall operation expected for **Murphy Oil Corp.'s** $1,000,000 **El Dorado, Ark.** bromine manufacturing plant. . . . **Hoerner Boxes, Inc.** will soon move into its half million dollar, 80,000 sq ft corrugated box

(*Continued on next page*)

Data taken from SPI's SOUTHERN INDUSTRIAL NEWS SERVICE, issued exclusively to SPI advertisers and their representatives throughout the South and Southwest.

(*Continued from page 97*)

factory at **Little Rock, Ark.** . . . 60,000 sq ft electric motors manufacturing plant will be built at **Paragould, Ark.** for **Emerson Electric Co.** . . . $4,000,000 expansion planned for **International Paper Co.'s Springhill, Ark.** plant.

April construction of $60,000,000, 500,000-ton aluminum plant for **Kaiser Aluminum & Chemical Corp.** in **Gramercy, La.**

Construction underway on $146,050 water filtration plant at **Guthrie, Okla.** . . . April production expected on **Hercules Portland Cement Co., Inc.'s** $2,000,000 **Locust Grove, Okla.** cement plant.

Clarksville, Tex. will be the site of the new unit of **Brandt Furniture Manufacturing Co.** . . . Operations anticipated in May for the **Corsicana, Tex.** bottle manufacturing plant of the **Chattanooga Glass Co.** . . . Completion scheduled in May for **American Rockwool Corp.'s** $325,000 rockwool insulation manufacturing plant at **Corsicana, Tex.** . . . $13,000,000 expansion of **Dallas Power & Light Co.** consists of new generator for **Mountain Creek Steam Electric Station** and 1750-acre lake and generating station. . . . $3,000,000 **Garland, Tex.** power plant to be in operation late in the year.

Sulphur Exploration Co.'s High Island, Tex. million dollar plant is expected to be in production late in 1956. . . . Sheffield Steel division of **Armco Steel Corp.** is planning a sintering plant and ore bedding system in **Houston, Tex.** which is expected to be completed late in 1956. . . . 1957 completion is anticipated for **Du Pont Co.'s** addition to its Jefferson County works in **Orange, Tex.** — a new unit for the manufacture of hypalon, a chemical rubber. . . . $22,000,000, 33,600 sq ft metalworking manufacturing plant is underway in **Waco, Tex.** for **Norris-Thermador Corp.**

Kansas and Missouri

Magnolia Petroleum Company's National Gas Division will operate the new gasoline plant in the Spivey-Grabs oil fields which is now under construction at **Attica, Kansas.**

$60,000 **Cape Girardeau, Mo.** sportswear factory underway for **Cagleco Sportswear Co.** . . . $1,997,650 power plant will be erected in **Kissick, Mo.** . . . **Louisiana, Mo.** is the home of a $100,000 industry — **Louisiana Plastics Co.,** which has begun production of the manufacture of plastic containers. . . . 165,000 sq ft **Delco-Remy Battery** factory is underway at **Olathe, Mo.** and is expected to cost a multi-million-dollars. . . . **Hussmann Refrigerator Company** is constructing a $600,000, 85,000 sq ft addition in **St. Louis, Mo.** . . . Christmas, 1956 is anticipated as the opening date of the **St. Joseph, Mo.** food factory of **Swift and Co.** which will consist of a large processing building and separate office housing.

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HELP FOR
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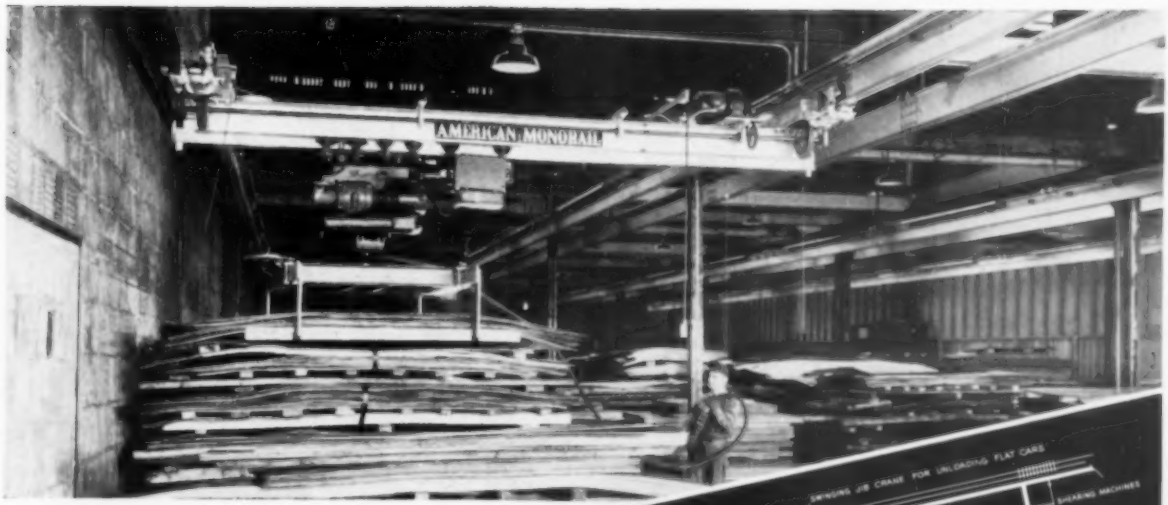
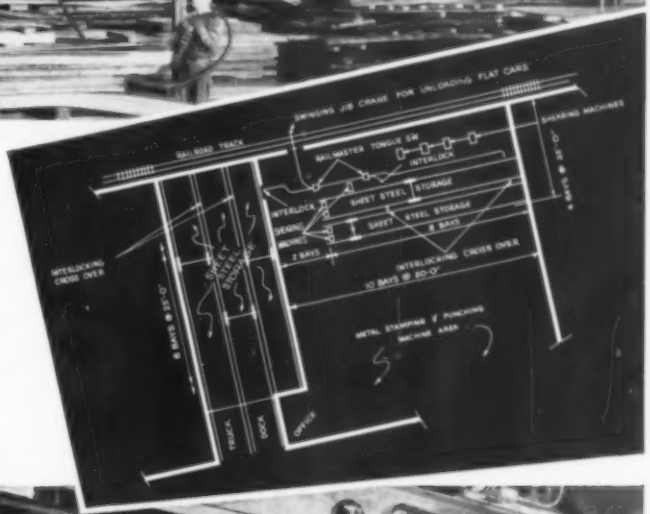
Facts and Trends ..... P. 4
News of Representatives ..... P. 8
Coming Meetings ..... P. 8
Catalogs and Bulletins ..... P. 16
New Equipment ..... P. 86
Index to Advertisers ..... P. 118

FOR SPECIAL REQUESTS
USE CARD ON PAGE 17





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The Hamilton Steel Products Company of Chicago now handles 250 tons of sheet steel per day with American MonoRail cranes as compared to 50 tons by previous methods. An increase of 400%.

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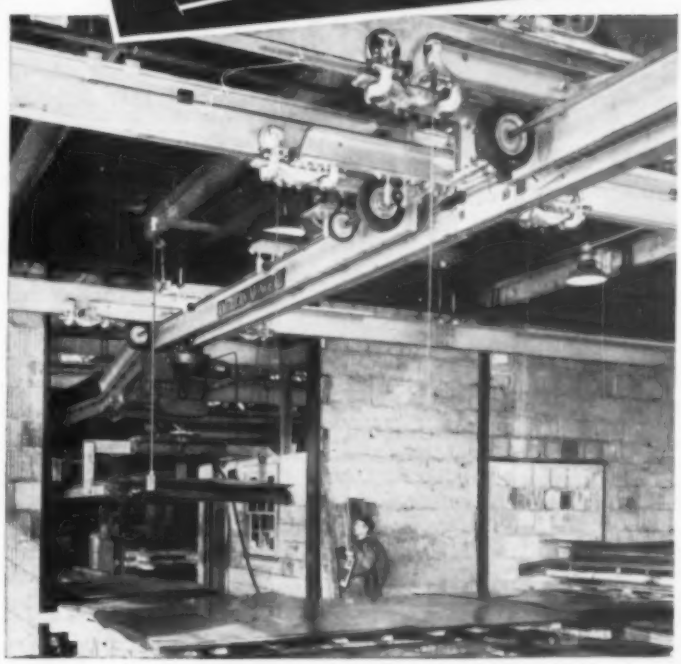

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News for the South & Southwest (Continued)

Starts on Page 8

Maryland Plant Cited for Safety Record

A million man hours worked without an accident in their Towson plant has won The **Black & Decker Mfg. Company** an Award of Merit given by The Liberty Mutual Life Insurance Company.

Shown receiving the plaque is **Alonzo G. Decker,** President and Chairman of the Board, who is the co-founder of the company. Standing behind Mr. Decker is **Charles Smickle,** Safety Manager of the Towson plant. **Morris J. Gordy** of Liberty Mutual is presenting the award. Towson plant Manager **John M. Fox** looks on.

The Award of Merit plaque reads: "The Black & Decker Mfg. Company, in recognition of the accident prevention record of their employees in operating without a lost-time accident for 1,233,422 man hours March 14, 1955 to August 17, 1955."

Southwestern Gas & Electric Eng. and Operations Depts.

Samuel M. Sharp has been appointed vice president-engineering and operations; and **Loyd T. Williams,** chief electrical engineer of the **Southwestern Gas & Electric Company** with headquarters in Shreveport, La.

Mr. Sharp, on leave of absence for some time doing special consultant work for Central and South West Corporation, parent company of Southwestern, returned to his Shreveport position late in 1955. Mr. Welch served as acting chief engineer during Mr. Sharp's absence.

In his new position, Sharp will have reporting to him the general office engineering, transportation, labor relations, REA contract relations and division superintendent's departments.

Mr. Sharp received his electrical engineering degree at the University of Arkansas. He started working for Central and Southwest Utilities, predecessor company to South West Corporation, as an electrical engineer at Dallas, Tex., in November, 1926. He moved to Shreveport as electrical engineer in February, 1932, and was named division engineer in July, 1940.

He was promoted to the position of chief engineer in June, 1941, was named a vice president in 1950 and was elected to the company's board of directors in 1952. He served in the armed forces from 1942 until 1945 when he was honorably discharged with the rank of lieutenant colonel.

L. T. Williams received his electrical engineering degree from Texas A. & M. College. He first started working for Southwestern in 1925 and was assistant engineer in the building of the 66-KV transmission line between Shreveport and Texarkana. He then became a member of the Shreveport engineering department, resigning in 1930 to go with Dallas Power and Light Company as a design engineer.

He returned to Southwestern in 1931 and worked in various capaci-

ties in the East Texas oil field, then was named division engineer for the East Texas oil field in 1938. He transferred to the general office engineering department in Texarkana in 1939 and came to Shreveport in 1940 when the G. O. engineering department was moved here. When Sharp entered the armed forces, Williams was named acting chief engineer, serving until 1945 when he was named assistant chief engineer. He was acting chief engineer while Sharp was on leave doing special work for Central and South West Corporation.

As chief electrical engineer, Williams will be in charge of the general office engineering staff and the planning and construction of substations and transmission lines. He also will work with the division superintendents on distribution problems.

J. M. Tull Company Purchases Florida Metals

The J. M. Tull Metal and Supply Company, Inc. of **Atlanta, Georgia** has purchased controlling interest in the Florida Metals, Inc., a corporation whose principal office is in **Tampa,** with offices and warehouse facilities in **Miami** and **Jacksonville.**

The acquisition of Florida Metals, Inc. by the J. M. Tull Metal & Supply Company will enable these two companies to give more complete service to the fast-growing industrial development now taking place in the Southeast.

Florida Metals, Inc. was organized in 1946 in Tampa, and for a time dealt primarily in aluminum products. More recently it has expanded by establishing warehouses in Miami and Jacksonville, and has broadened its line of products to include all non-ferrous metals and accessories with the exception of Nickel products.

It is the intention of the Tull Company to expand the inventories at Tampa, Miami and Jacksonville, and to equip them with more adequate warehouse facilities, including cutting, threading and shearing equipment. Moreover, the affiliation will now enable Florida Metals, Inc. to sell the other products, including those of the International Nickel Company such as Nickel, Monel and Inconel.

Florida Metals, Inc. will continue to operate with its same organization, but with expanded inventory and facilities. **Sam Dennard** has been named manager of the Jack-

Your plant and equipment suffers . . . your community goodwill fades away. These problems can be solved. Prat-Daniel Collectors are designed for the control of industrial dusts and flyash. Multiple small diameter tubes provide powerful centrifugal forces, resulting in sustained high collection efficiency . . . even with ultra-fine dusts.

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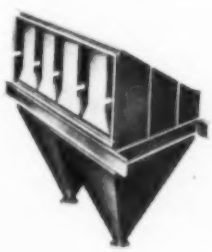
Write for Reprint No. 102 titled, "What Type Collector?"



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sonville warehouse. Mr. Dennard has been with the Tull Company for twenty-five years and for the last year has resided in Jacksonville. Another Tull Company representative is working with Florida Metals. He is **Hugh Thompson** of Orlando, Florida, who is assigned to head a special sales training course with the Florida salesmen.

The J. M. Tull Company was founded in 1914 and has operated since that time as an industrial supply and metals warehouse in Atlanta, Georgia. The affiliation with Florida Metals, Inc. will enable the two companies to operate four warehouses in strategic cities of Georgia and Florida.

The two companies are planning to construct a new warehouse building in Jacksonville. The warehouse will have approximately 40,000 sq ft of space to accomodate the inventory and metal cutting equipment.

Odom Fanning Joins Midwest Research Institute

Odom Fanning has been appointed Manager, Information Services for **Midwest Research Institute**, Kansas City, Mo.

Mr. Fanning is a graduate of Emory University. He was a reporter for The Atlanta Journal, 1940-43. During World War II he served in the United States Marine Corps for three years.

For four years he was science reporter for The Atlanta Journal, and later he directed the nationwide scientific information program of the Communicable Disease Center, U. S. Public Health Service.

He has been in charge of the publications services of the Georgia Tech Engineering Experiment Station and editor of the Station's magazine, *The Research Engineer*, for the past two years.

Kentucky Oxygen Plant for Air Reduction Co.

A new oxygen plant will be built in **Calvert City, Kentucky**, by the **Air Reduction Sales Company**, a division of Air Reduction Company, Incorporated. Nitrogen and argon will also be produced at the plant.

This new plant will be completed in the Spring of 1956 and will serve chemical and metalworking customers in the growing Calvert City and lower Ohio valley industrial areas.

This is the third Air Reduction plant to be built in Calvert City, Kentucky. The first was the National Carbide division's acetylene generating and calcium carbide plant. This plant supplies pipeline acetylene to two B. F. Goodrich Chemical plants and will soon supply pipeline acetylene to the almost completed General Aniline and Film plant. The Air Reduction Chemical Company division's vinyl acetate monomer plant, to be completed in early 1956, will supply a portion of its production by pipeline to the American Aniline and Extract Company plant, also under construction.

Hampton Now Kathabar Eng. With F. J. Evans Eng. Co.

Comer F. Hampton has been appointed Application and Sales Engineer for the Southeastern Territory with headquarters in Atlanta for **F. J. Evans Engineering Company**, Birmingham, Alabama.

A graduate of the University of Georgia, Mr. Hampton will specialize in the application of Kathabar air conditioning equipment to meet industrial and commercial requirements in the southeastern United States. The F. J. Evans Engineering Company represents the Kathabar Division of Surface Combustion Corporation, Toledo, Ohio, for the sale of its Kathabar equipment, in the South.

A native Georgian, Mr. Hampton was associated with Carrier Atlanta Corporation and L. M. Leathers' Sons in air conditioning application work prior to joining the Evans organization. He is a Registered Mechanical Engineer in the state of Georgia, a member of the Georgia Society Professional Engineers and the American Society of Heating and Air Conditioning Engineers.

News (Continued)

C & B Distributor for Nebel

The Cameron & Barkley Company, Southeast distributor of industrial supplies with branches at Charleston, S. C., Savannah, Ga., and Jacksonville, Orlando, Tampa, and Miami, Florida, has announced its appointment as distributor for the **Nebel Machine Tool Corporation's** line of Nebel metalworking lathes.

There are three models in the line: the extension bed gap, removable block gap and engine lathes. Gap lathes are constructed in swing through the gap up to 52". Used extensively for production and maintenance with its variable swing capacity and standard engine lathe feature they are a dual purpose lathe, meeting ASTE Standards.

Sales and service of these Nebel Lathes will be handled through Cameron & Barkley's Machine Tool Division, under the direction of **Robert L. Wolfe,** Sales Manager, Machine Tool Division.

Cone Mills Finishing Plant Underway at Carlisle, N. C.

Construction is underway on **Carlisle Finishing Company,** the new Cone Mills Corporation plant in Carlisle, N. C. Daniel Construction Company, General Contractors, with home offices in Greenville, S. C., is expected to complete the plant in time to allow production to begin late in 1956.

The new mill will be located on a 1,000-acre site with buildings containing about 600,000 sq ft of floor space and consisting of the main building, housing the finishing plant, auxiliary buildings including a filtration plant, power plant, and pumping station.

The company expects to employ approximately 700 people, initially, in the printing and finishing of textile piece goods. Engineers for the project are the J. E. Sirrine Company of Greenville.

PMC Southwest Agent for Alco Products, Inc.

Power Machinery Company has been appointed agent for the new Alcotwin line of finned tube heat exchangers. Under the terms of the

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ROPER PUMP-MOTORS

These units offer low-speed and high-torque, and their versatility finds them well-suited to heavy-duty service within their operating range. In general, recommended speed is 200 to 800 R.P.M. with pressures to 800 P.S.I. In this range, they require from 7 to 40 G.P.M. flow and will develop up to 11.5 H.P. output at maximum speed and pressure.

ROPER SERIES F PUMPS

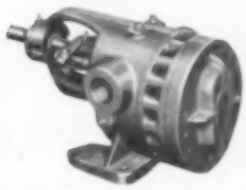
Among the dependable Ropers is the Series F Pump — pressures to 300 P.S.I., sizes 1 to 300 G.P.M. It features four-port design with 8 optional piping arrangements . . . supplied in standard fitted models. With packed box or mechanical seal; with or without relief valve.

ROPER SERIES K PUMPS

Operate your hydraulic circuit with the correct size Roper for the particular job. In many cases the Series K will do, for it is rated from pressures to 150 P.S.I., capacities ¾ to 50 G.P.M. This model is compact, sturdy . . . is self-lubricated by liquid pumped. Comes with packed box or mechanical seal . . . with or without relief valve.

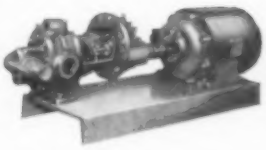
ROPER SERIES H PUMPS

Lower maintenance costs with a Roper. For instance, a pump like the Series H with pressures to 1000 P.S.I., sizes 10 to 75 G.P.M. is ideally suited for hydraulic mechanisms and for other applications requiring high pressures. Spur gears run in axial hydraulic balance . . . roller bearings and bronze wear plates reduce friction. Available with packed box or mechanical seal.



ROPER SERIES 3600 PUMPS

You'll profit more with dependable Roper Series 3600 Pumps on the job . . . they are speedy, quiet, and plenty rugged. Service-proved features such as self-lubrication, adjustable relief valve, hardened gears, and mechanical seal contribute to Roper dependability. Sizes range from 40 to 300 G.P.M.; pressures to 60 P.S.I.



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ROPER Rotary Pumps

agreement, Power Machinery will be the exclusive agents for **Alco Products'** new equipment in **Kansas, Oklahoma, Texas and Louisiana.**

The addition of the Alcotwin to the Alco line of conventional shell and tube equipment will enable PMC to offer a complete line of heat transfer products for every process requirement in the Southwest.

PMC personnel concerned with the new sales arrangement include **H. C. Wieghard,** president of Power Machinery Company; **W. T. Stewart,** manager of heat exchanger products; **Richard Henry,** manager of the company's **Houston** office; and **C. E. Shockey, Kansas City** manager.

Weighard was graduated from Washington University in St. Louis with the degree of B.S. in electrical engineering in 1934. He has spent his career in application engineering and machinery sales. Prior to joining PMC in 1943, he worked for the Worthington Corporation and later was employed by the Lummus Company.

A graduate of Rice Institute, **W. T. Stewart** worked for Engineers and Fabricators until entering the Navy in 1942. He joined Power Machinery immediately after his discharge in 1945.

H. C. Wieghard and W. T. Stewart

Richard Henry and C. E. Shockey

Of the two managers, **Henry** was graduated from Georgia Tech in 1928 and worked for the Texas Company and M. W. Kellogg Company before joining PMC in 1949. **Shockey** was employed by the Byron-Jackson Company immediately after his graduation from Kansas University in 1950, and joined PMC in 1952 to open the firm's Kansas City office.

Virginia Plant to Build Reactor Fuel Elements

The first lump-sum contract to build reactor fuel elements in a privately owned facility has been awarded to **The Babcock & Wilcox Company** according to an announcement by the Atomic Energy Commission. The contract was let on competitive bids and calls for at least 325 fuel element assemblies to replenish the core of the Materials Testing Reactor at Arco, Idaho, operated by the Phillips Petroleum Company for the A.E.C.

A prototype fuel element of the kind to be built under the contract, was manufactured and placed on display in the Babcock & Wilcox exhibit at the International Atomic Exposition. The unit was built at the company's temporary plant facilities at Lynchburg, Va.

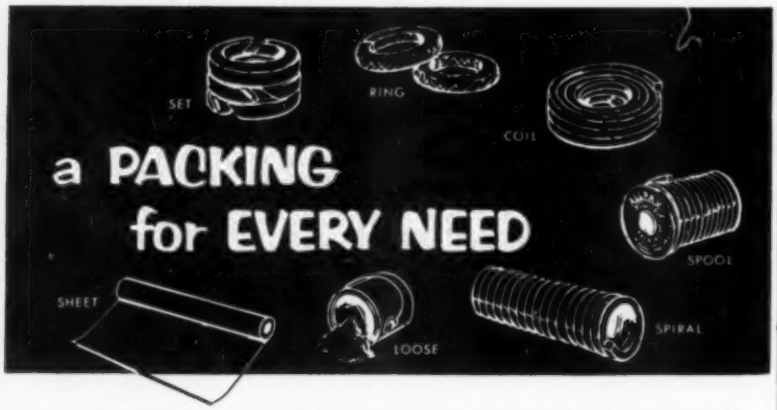
The new fuel element fabrication plant now under construction at Lynchburg is expected to begin full-scale operations next spring and will be the first major facility of this type in private industry. Delivery of the first 35 assemblies to Arco is scheduled for August 1956.

Day Company—Mid-South

Walter H. Gay of Memphis, Tennessee, has been appointed Sales Representative by **The Day Company,** Minneapolis, Minnesota, industrial dust control systems and equipment manufacturer. He will cover the sales territory in **Arkansas, Tennessee, Mississippi** and part of **Alabama.**

As representative for The Day Company, Mr. Gay will serve industrial plants, offering Day dust control systems and equipment. In addition to representing The Day Company he also represents other firms making allied equipment.

Mr. Gay has had over 20 years' experience in the chemical and industrial field as a chemist, consultant, research director and plant manager. His offices are located at 1024 South Perkins Road, Memphis, Tennessee.



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News (Continued)

Pierson Named V.P. of Eggelhof Engineers

T. H. Pierson has joined **Eggelhof Engineers, Inc.**, Houston, Tex., as vice president.

Mr. Pierson will head one of the process divisions and also assist in overall management of the engineering company, which maintains seven offices in Texas, Louisiana and Oklahoma.

Prior to joining the company, Mr. Pierson was with Corn Products Refining for eight years. Before that, he served as foreman of the instrument department of B. F. Goodrich Chemical Company, near Beaumont, Texas. His first position was with Magnolia Petroleum Company. By the time he left, he was foreman of the instrument department.

Knoxville Company Celebrating 70th Year

Seventy years have passed since **W. J. Savage Company** began engineering and setting its first structural steel plant in the Knoxville, Tenn., area. The great strides being made at that time in rail transportation and machinery mechanism spurred building the first portion of the Savage plant on its present location in 1905. Since that date, there have been two major additions to the original building, lengthening it by more than a city block, and removing the stables and blacksmith shop.

The Savage organization not only builds and maintains machinery for its customers, but it also sells a large and diversified line of power-transmission supplies and equipment. Only recently they added another famous name to the ever growing

"Electricity and Electrical Power"

Basic information on the fundamentals of electricity for the first time available in ONE Volume!

A limited edition of this important handbook has just been printed and is available to subscribers to SOUTHERN POWER AND INDUSTRY only. Order your copy NOW with a new or renewal subscription to this magazine.

A series of seven articles, "Electricity and Electrical Power" by Roy W. Wages, industrial engineer for Georgia Power Company, was published last year in SOUTHERN POWER AND INDUSTRY and received wide attention and favorable comment from plant engineers in the South and Southwest.

Demands for reprints of this series became so great that we have had all the articles bound in one volume. This useful 72-page book is now available to SOUTHERN POWER AND INDUSTRY subscribers exclusively.

In simple, practical terms, Mr. Wages makes clear the mysteries of electricity all the way from explaining and defining a volt to a discussion of the sine curve of alternating current motors. The book is liberally illustrated with diagrams and pictures which help make the text crystal clear. Throughout the pages, the author does everything possible to simplify the presentation of facts for easy study and understanding.

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DIRECT-FIRED UNITS

provide simple, low-cost heat

For large unpartitioned areas in warehouses, factories, auditoriums or supermarkets. THERMOBLOC provides gently circulated warm air that assures customer and employee comfort.

Complete automatic control automatically regulates heat and retards air fans until heater is warmed up. This feature eliminates cold blasts during first few minutes of start-up.

Nine models from 100,000 btu to 2,250,000 btu output assures a size or combination of sizes to fit the exact needs of your plant.

THERMOBLOC OFFERS THESE ADVANTAGES

- Cost less than conventional types of installations.
- Operation cost lower than other heating methods.
- Circulates heat fast . . . within 90 seconds after start-up.
- Does not require constant attendant. Automatic temperature and safety controls always on guard.
- Direct heat circulation. No pipes and radiators. Normally does not require ducts although ducts can be specified to heat offices, washrooms, etc.
- Easily relocated when necessary.
- Can be furnished to burn oil or gas, or both on specification.

Investigate THERMOBLOC today for the answer to your heating problem.

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Manufacturers of P-D Power Equipment

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list—**American Chain & Cable Company, Inc.**—for the distribution of Lay-Set wire rope, a product of ACCO's Hazard Wire Rope Division.

Well known throughout the Southeastern States, the Savage organization helps to "keep the wheels of industry turning" through its program of maintenance, repair, and rebuilding of the largest to the smallest machinery, and in the manufacture and sale of its own products through dealers in the United States and foreign countries and its local sales force. Among the better known products of manufacture are the Savage-Gauntt chemical feeder and the Bumble-Bee bag-closing machine.

Lumber mills, furniture factories, coal mines, flour and feed mills, textile mills, stone and marble quarries, construction material manufacturers, electronics companies, plastic product manufacturers are among the **countless** industries and businesses that are Savage customers.

Wierton Steel—W. Va.

Koppers Company, Inc., has been awarded a contract to build a battery of 41 chemical-recovery coke ovens by the **Weirton Steel Company, Weirton, W. Va.**

This is the ninth such contract to be awarded by Weirton Steel to Koppers in the last 34 years. When this battery is completed, Weirton Steel will have a total of 294 ovens capable of processing 7,200 tons of coal per day and producing more than 5,000 tons of coke per day.

In addition, the contract specifies extensive alterations and additions to the chemical-recovery and benzol facilities. The new battery will be equipped for under-firing with blast furnace gas.

Feedrail Corporation Realigns Southern Territory

The Feedrail Corporation, 125 Barclay Street, New York 7, N. Y., manufacturers of trolley busway electrification systems for cranes and hoists, production lines, test lines, cutting and sewing rooms, etc., has completed realigning its Southern territories. The new territorial arrangement and the representatives are:

North Carolina, South Carolina — Glenn & Larson, 123 Brevard Court, Charlotte 2, N. C.

Georgia, Eastern Tennessee — Glenn & Larson, 172 Simpson St., S.W., Atlanta 13, Ga.

Alabama, Central Tennessee, Northwest Florida — Robert S. Morrison, 1028 7th Ave., So., Birmingham, Ala.

Florida — Glenn & Larson, 918 Langford Building, Miami 32, Fla.

Louisiana, Mississippi — E. J. Hagan, 3820 Louisiana Ave., New Orleans 25, La.

Texas, Oklahoma, Arkansas — James M. Tuite, 1802 Corona St., Dallas 14, Texas.

Kentucky — Reitze & Company, 2209 S. Floyd St., Louisville 17, Ky.

Rivers Heads Sales of Ssirco Container Div.

Walter Rivers has been appointed General Manager of Sales, Metal Container Division, **Southern States Iron Roofing Company.**

Mr. Rivers had diversified industry experience prior to his association with Southern States five years ago and has acquired knowledge of the metal container field since that date.

Mr. Rivers was instrumental in amalgamating several small Ssirco container manufacturing units into the highly modernized Ssirco container manufacturing facility in Birmingham, Alabama.

The container sales division for Southern States is now located at Savannah, Georgia, but in the interest of providing improved customer service for its container customers, Mr. Rivers will establish the headquarters for the container sales division at the Birmingham, Alabama, container plant on March 1. Southern States will then have integrated its manufacturing and sales activities under one roof.

News (Continued)

Airtemp Division Southern Appointments

Several new appointments to the field engineering and sales staffs of the **Airtemp Division of the Chrysler Corporation** include:

Garnet Walter Lunsford — named District Manager, **Atlanta** Region. He was formerly a member of the Minneapolis Honeywell Regulator Company at Charlotte, North Carolina.

Elmer F. Voss — named Field Engineer, **Atlanta** Region. A resident of the latter city, Mr. Voss, prior to joining Airtemp, was associated with Engineering Contractors, Inc., of Atlanta.

R. B. Hamilton — named District Manager, **Dallas** Region. Mr. Hamilton is a native of Dallas, where he has been associated with retail appliance sales for a number of years. He will be in charge of Airtemp room air conditioner programs in South and West Texas.

John E. Ballew — named District Manager, **Dallas** Region. A former appliance wholesaler, he will be in charge of North Texas for Airtemp.

Mathieson Buys Shreveport Plant of Am. Creosoting Co.

The Shreveport plant of the American Creosoting Company has been purchased by **Olin Mathieson Chemical Corporation.**

The transaction, which includes a two cylinder creosoting plant and an ADZ mill for processing ties, will give Olin Mathieson the ability to more than double its current output of creosoting materials. Creosoting operations, which have been conducted at the Forest Products Division's Bell Street treating plant in Shreveport, will eventually be concentrated at the newly acquired facility.

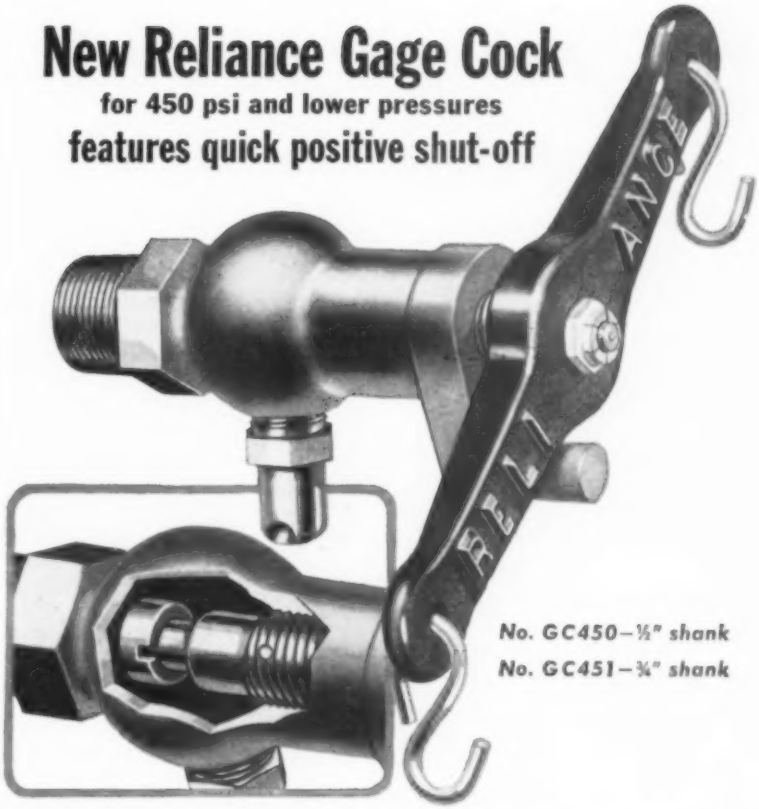
Olin Mathieson will continue to produce Wolmanized treated lumber at its Bell Street plant.

The new plant site covers 136 acres and has two 132 foot long creosoting cylinders. It is equipped to treat all types of lumber, poles, posts, and piling. The ADZ mill has facilities for trimming and boring timber for use as railroad ties.

New Reliance Gage Cock

for 450 psi and lower pressures

features quick positive shut-off

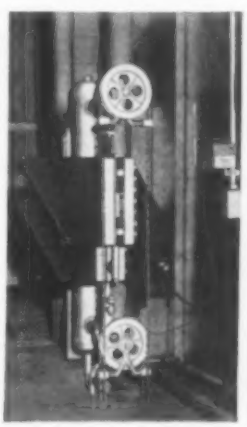


No. GC450—½" shank

No. GC451—¾" shank

Positive chain-pull operation, renewable cone valve and seat, and adjustable lever are features of this new Reliance Gage Cock. Patterned after our popular forged steel cock for higher pressures, the new GC450 has *bronze* body and is designed for 450 psi and lower pressures. Cone of stainless steel and seat of monel metal offer unusual resistance to cutting action of steam and water. Both are renewable. Quick-closing (¼ turn) screw action. New-type lever has 18 non-slip positions. Adjustable discharge nozzle. Write for complete information.

Reliance Water Columns & Trim



Products of this oldest maker of water column equipment include columns for all pressures and latest developments in water gage valves, gage inserts, direct-to-drum gage assemblies and gage illumination. Shown at right — 1100 psi forged steel Reliance Water Column with mica-protected high pressure flat glass two-window gage insert made faster and easier to read by our Mercury Lamp Illuminator and direct vision hoods.

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The name that introduced safety water columns....in 1884

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BOILER SAFETY DEVICES

Catawissa
PERFECT SEAL
Unions

HOT FORGED from solid, rectangular steel bars, designed and produced for dependable, long-life service under the severest piping conditions!

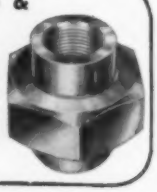
A TYPE FOR EVERY USE!
FOR ALL PRESSURES!
FOR ALL TEMPERATURES!

Standard & Double Extra Heavy
UNIONS
Available with screwed or socket weld ends. 3000-lb. sizes 1/8" to 3"; 6000-lb. sizes 1/8" to 2".

ORIFICE UNIONS
With screwed or socket weld ends. 3000-lb. and 6000-lb. service.

MALE & FEMALE UNIONS
With steel-to-steel, bronze-to-steel, stainless steel-to-steel or orifice seats. 3000-lb. service only.

FULL STAINLESS & FULL ALLOY STEEL UNIONS
With screwed or socket weld ends. 3000-lb. and 8000-lb. service.



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Showing the Complete Catawissa line of Perfect Seal Products
CATAWISSA VALVE & FITTINGS COMPANY
950 MILL ST., CATAWISSA, PA.

News for the South & Southwest (Continued)

New Division of A-S

Ross Heat Exchanger Division of American Radiator & Standard Sanitary Corporation with headquarters in Buffalo will conduct the operations in the heat exchanger field formerly carried on by Kewanee-Ross Corporation. Kewanee-Ross is being dissolved in accordance with the policy of divisionalizing **American-Standard** activities along major product lines.

At the same time, the Kewanee Boiler Division is being established to conduct the steel boiler activities of the dissolved company.

Officers of the new Ross Heat Exchanger Division are **John C. Linsenmeyer,** president; **Richard S. Reade,** executive vice president; **John W. Gudgel,** vice president, sales and marketing; and **Townsend Tinker,** vice president, engineering, research and development.

Black & Decker Expansion

A $3,500,000 addition to **The Black and Decker Manufacturing Company's** electric tool plant at **Hampstead, Maryland,** will be started immediately. The new plant unit, which will about double the plant area at Hampstead, should be ready for occupancy by next October.

The new addition, which will comprise about 208,000 sq ft will be the third factory unit erected at Hampstead since start of construction of the first unit at this site in 1951. The Austin Company of Cleveland has been awarded the contract for the new construction.

Pennsalt—Southwest

Edward K. Dietrich has been named St. Louis sales-service representative of the **Pennsylvania Salt Manufacturing Company's** B-K Department. He succeeds **Ben Stonoga** who recently became sales supervisor of the company's southwest territory.

Mr. Dietrich is a native of Abilene, Kansas. His extensive technical background includes experience in milk plant operations and food inspection. Immediately before joining the Pennsalt organization, he was employed as dairy sanitarian with the St. Louis County Health Department.

Reynolds Metals—Florida

Reynolds Metals Company has boosted the status of its **Miami, Florida,** sales office to that of a divisional office. The aluminum firm's Miami sales headquarters has been moved to the Aimsley Building from its former quarters in the Ingraham Building, tripling its space. The number of sales and office personnel has been more than doubled.

Under the new arrangement, the divisional sales office, which formerly was a smaller district sales office, will service the entire state of Florida. Personnel have been added to handle sales management, sales service, order writing, credit and other operations.

G. T. Shannon Vice President of Walter Kidde Engrs., S.W.

Walter Kidde Constructors, Inc., engineers and builders of New York and Houston, has elected **Gerard T. Shannon** vice president of Walter Kidde Engineers Southwest, Inc., a division of the parent company with headquarters in Houston.

Mr. Shannon joined Walter Kidde Constructors in 1953 as managing engineer for the company's industrial engineering department. He was previously assistant director Engineering and Construction Division, U. S. Atomic Energy Commission, New York Operations Office. He has had extensive experience in plant design, construction and operation with companies such as Monsanto Chemical Co., Stock Construction Corp., The Port of New York Authority, Frederick Snare Corp. and the S. A. Healy Company.

In addition to his new duties, Mr. Shannon will continue as general manager of the southwest office of Walter Kidde Constructors and will report directly to E. Warren Bowden, vice president.

Large Turbine-Generator for Alabama Power Co.

A 430,000-pound generator armature core, a portion of the largest rated steam turbine-generator unit ever manufactured for a southeastern United States private utility concern, was shipped recently to **Alabama Power Company's** station at

Gorgas, Alabama, by **General Electric Company's** Large Steam Turbine-Generator Department.

When placed in operation, the generator will produce 183,000 kva. The turbine which will drive the generator is of the tandem-compound, double-flow, reheat type and is rated at 156,250 kw. Steam will enter the high-pressure section of the turbine at 1800 psig with an initial temperature of 1000 F. Steam from the high pressure section will return to the boiler to be reheated to the 1000 F temperature, whereupon it will reenter the turbine and flow through the double-flow, low-pressure section from where it will exhaust to the condenser.

Report on Turbine Spindle Failure

THE FIRST COMPLETE report of an exhaustive engineering investigation of the large steam-turbine spindle failure at Commonwealth Edison's Ridgeland station at Chicago was presented as Paper No. 55-A-172 at the 1955 Annual Meeting of ASME. The excellently illustrated paper was presented by H. O. Emmert, Assistant Chief Engineer, Steam Turbine Department, Allis-Chalmers Manufacturing Co.

The failure occurred December 19, 1954. The low-pressure spindle of a 165,000 kw cross-compound turbine burst during a routine overspeed-trip test. Immediately thereafter, a continuous and intensive investigation of its circumstance and cause was initiated. A report has been prepared to present findings of the investigation and an analysis of the accident. The constructive nature of this engineering paper and the detailed information presented, make it desirable for the reference files of individual engineers directly concerned with large high pressure turbines. Therefore Allis-Chalmers is making it available to such individuals in a well illustrated 20 page booklet. . . . Write: The Editors of SOUTHERN POWER AND INDUSTRY on your business letterhead.

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slough off or wear through, and its solid, integral braid gives greater flexibility without distortion in ring forming.

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LONGER SERVICE LIFE
is your premium for selecting this stronger, longer wearing, better lubricated packing.

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Better Production Ideas & Methods

N-1 Plastic Pipe as Conduit

12-page booklet "Economical Cable Conduit" describes advantages of Tenite butyrate plastic pipe as conduit for electrical power lines. Photos show pipe installations and features joining techniques and adaptability for various purposes.—Eastman Chemical Products, Inc., New York 16, New York.

For More Free Data — Circle N-1 on the Handy Return Card — p 17

N-2 Vibration Hangers

Catalog VH-55 covers high deflection, heavy-duty vibration hangers, designed to prevent transmission of noise and vibration suspended equipment and to flexibly support piping systems. Catalog covers rubber-in-shear type and steel spring type hangers.—T. R. Finn & Co., Inc., Industrial Division, 200 Central Ave., Hawthorne, N. J.

For More Free Data — Circle N-2 on the Handy Return Card — p 17

N-3 Gear Lubricant

Bulletin 105 covers Molykote 165X, an open-gear lubricant for application on highly loaded gears which normally can be lubricated only infrequently. Applications include construction machinery, elevator and escalator gear trains, mechanical presses, wenches, etc. — The Alpha Molykote Corporation, 65 Harvard Avenue, Stamford, Conn.

For More Free Data — Circle N-3 on the Handy Return Card — p 17

N-4 Plastic Pipe

Folders 101 and 102 cover the selection of company's unplasticized rigid pvc pipe where high chemical resistance and/or high impact resistance is desired. Pressure-rated pipe offers the same working pressure in every size from ½" to 4".—Alpha Plastics, Inc., 14 Northfield Road, West Orange, N. J.

For More Free Data — Circle N-4 on the Handy Return Card — p 17

N-5 Standardized Buildings

28-page A. I. A. file 14-I describes company's system of standardization in building construction. Covers selection of standard door and window combinations, collateral construction materials and other optional features. — Luria Engineering Company, Bethlehem, Pa.

For More Free Data — Circle N-5 on the Handy Return Card — p 17

N-6 Silicone Reference Guide

1956 reference guide to company's silicone products describes almost 150 of the most generally used products. Product descriptions are supported charts, tables, graphs and application photographs. — Dow Corning Corporation, Midland, Michigan.

For More Free Data — Circle N-6 on the Handy Return Card — p 17

N-7 Welded Grating

Brochure covers usage of steel, aluminum and stainless grating and stair treads. Detailed safe load table with conversion factors, panel width constant chart and data on standard widths and types of treads most frequently used are featured. —Klemp Metal Grating Corporation, 6601 South Melvina Avenue, Chicago 38, Illinois.

For More Free Data — Circle N-7 on the Handy Return Card — p 17

N-8 Electrical Wire and Cable

16-page bulletin 1096 lists all trade names, products and applications of company's products. Two selection charts — one by application and environment and one by cable type—are a practical guide in selecting the best insulated electrical cable for each condition of use.—The Okonite Company, Passaic, N. J.

For More Free Data — Circle N-8 on the Handy Return Card — p 17

N-9 Asbestos Cement Pipe

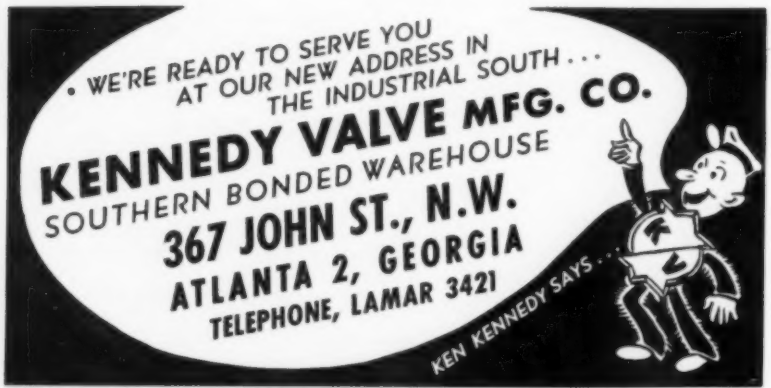
8-page booklet "Transite Sewer Pipe with Ring-Tite Coupling" illustrates economies which this pipe can effect in the design, installation, operation and maintenance of a sewer system.—Johns-Manville, 22 East 40th Street, New York 16, N. Y.

For More Free Data — Circle N-9 on the Handy Return Card — p 17

N-10 Flexible Metal Hose

12-page catalog 152 covers company's line of flexible metal hose products along with complete coupling data. Easy four-step metal hose selection guide is included. — Flexonics Corporation, 1381 South 3rd Avenue, Maywood, Illinois.

For More Free Data — Circle N-10 on the Handy Return Card — p 17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Conforming to specifications known as "National Standard" and approved for use in fire protection systems by the Underwriters' laboratories and The Factory Mutal Fire Insurance Companies.

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OFFICE AND WAREHOUSES IN NEW YORK, CHICAGO, SAN FRANCISCO, ATLANTA. SALES REPRESENTATIVES IN PRINCIPAL CITIES.

N-11 Steam Trap Selector

12-page bulletin "Yarway T-9" will aid in the selection and application of steam traps on chemical processing equipment. Bulletin features a 3-page fold-out piping diagram for 22 pieces of typical processing equipment — each showing recommended steam trap and piping arrangements. — Yarnall-Waring Company, Chestnut Hill, Philadelphia 18, Pa.

For More Free Data — Circle N-11 on the Handy Return Card — p 17

N-12 Variable Speed Drive

4-page bulletin "How to Care for Jr." shows how to keep the company's variable speed drives in operation at peak efficiency. Bulletin was prepared primarily for maintenance engineers. — Reliance Electric and Engineering Co., 1976 Ivanhoe Road, Cleveland 10, Ohio.

For More Free Data — Circle N-12 on the Handy Return Card — p 17

N-13 Venting Principles

12-page bulletin describes principles of venting flammable liquid storage and process tanks for effective operation, fire protection and low-cost maintenance. — The Protectoseal Company, 1920 So. Western Ave., Chicago 8, Ill.

For More Free Data — Circle N-13 on the Handy Return Card — p 17

N-14 Power Pump Maintenance

20-page catalog G-2198 on "How To Install and Take Care of Power Pumps." Features frames from the Worthington Full Color, sound slide film on the same subject. Booklet is designed for use with your instruction book. Part I covers information on foundation, suction condition, piping support, cleaning, alignment, lubrication and testing. Part II on maintenance covers initial and replacement packing, packing adjustments, common types of pump bells and tips on trouble shooting common pump problems. — Worthington Corporation, Harrison, N. J.

For More Free Data — Circle N-14 on the Handy Return Card — p 17

N-15 Ductile Iron

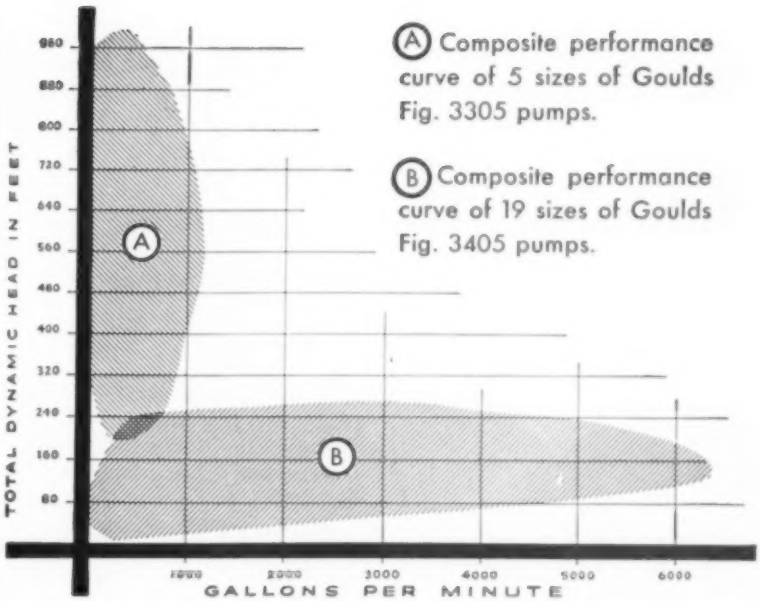
28-page catalog 2965 describes "Ductile Iron, The Cast Iron That Can Be Bent" and features tables, charts and photos. Typical application in various industrial fields are tabulated. — The Internation Nickle Company, Inc., New York 5, N. Y.

For More Free Data — Circle N-15 on the Handy Return Card — p 17

N-16 Overhead Cranes

8-page illustrated catalog tells why the "E" type of overhead traveling crane is valuable in industry used intermittently

(Next page please)

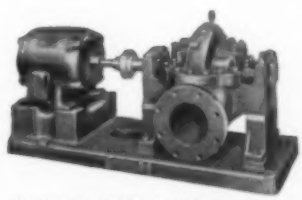


Ⓐ Composite performance curve of 5 sizes of Goulds Fig. 3305 pumps.

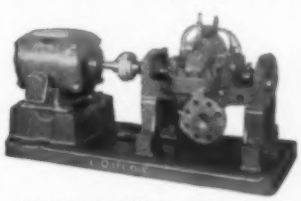
Ⓑ Composite performance curve of 19 sizes of Goulds Fig. 3405 pumps.

Do you need **pumping capacity?**

. . . or head? . . . or both?



Goulds Fig. 3405 single-stage pump.



Goulds Fig. 3305 two-stage pump.

With these two groups of Goulds centrifugal pumps you can meet an extremely wide range of pumping requirements.

For volume pumping, 19 sizes of the Fig. 3405 single-stage, double-suction pump provide capacities up to 6,400 GPM, and heads to 280 ft.

For greater pressure requirements 5 sizes of the Fig. 3305 two-stage pump provide heads up to 1,000 ft., and capacities to 1,200 GPM.

Both of these groups of pumps have important new design and construction features that insure efficient operation and long life. Yet, because so many of their parts are interchangeable, *you can cut your parts inventory in two—or better.*

For example, you need only 3 different shafts for all 24 sizes of pumps in both groups.

We'd like to send you additional details about these pumps, including specifications and performance curves. Just write for Bulletin 721.6 about the Fig. 3405 single-stage pumps, and Bulletin 722.6 about the Fig. 3305 two-stage pumps. We'll be glad to send you copies of both.

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Catalogs

(*Continued from page* 111)

or where high speed lifting and travel are not essential. Major components are explained. — Whiting Corporation, Harvey, Ill.

For More Free Data — Circle N-16 on the Handy Return Card — p 17

N-17 Plastic Pipe Fittings

12-page brochure covers industrial application of plasticized polyvinyl chloride pipe fittings and flanges. Installation information pressure — temperature charts, chemical resistance tables and other helpful reference data are included. — Tube Turns Plastics, Inc., 2929 Magazine St., Louisville 11, Ky.

For More Free Data — Circle N-17 on the Handy Return Card — p 17

N-18 Pneumatic Conveyors

Catalog P-56 describes pneumatic ash conveyor system for steam plants; systems for the collection, processing, reclamation of cutting oils and metal chips; and systems to handle dry or granular materials. — National Conveyor Company, 25 Industrial Ave., Fairview, N. J.

For More Free Data — Circle N-18 on the Handy Return Card — p 17

Low Voltage Distribution

(*Continued from page* 62)

or ground wire formerly used for equipment grounding to conduit. There is less danger of physical damage where the ground wire is enclosed.

Sealing of ducts or conduits extending from one area to another where temperature and humidity changes exist, reduces condensation of water vapor in conduits. This can be done with several compounds and fittings available on the market.

Conference on Electrical Equipment

(*Continued from page* 47)

Shepard of P. L. Davidson Company, Greensboro, N. C.; M. S. Carlson, ITE Circuit Breaker Company, Philadelphia, Pa.; H. B. Greear, General Electric Company, Atlanta, Ga.; Howard Pancoast, Bryan Electric Company, High Point, N. C.; E. W. Beck, Westinghouse Electric Corporation, East Pittsburgh, Pa.; and George Benn, J. P. Stevens & Company, Greensboro, N. C.

J. T. Meador, Southern Electric Company, Charlotte, N. C., presided over the meeting. Sponsors of the conference were the School of Engineering and the School of Textiles at North Carolina State College together with the AIEE through its North Carolina Section and Textile Sub-Committee.

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KALAMAZOO MICHIGAN

Flexible Couplings

(*Continued from page* 54)

called, are made up of a flexible half-coupling on the driving shaft and the driven shaft, respectively, with a special tubular spacer arranged between them.

A coupling made up in this way makes it possible to set a machine to be driven at a predetermined distance from the driving unit. It also provides for greater misalignment where necessary. The coupling may be disassembled and removed, allowing work to take place on either of the connected machines without moving either piece of equipment from its foundation.

Axial Adjustment

Certain types of machines have driven shafts for which rather extensive axial adjustment must be provided. An outstanding instance is the Jordan, extensively used in paper mills. Made up in the working element of the Jordan is a conical "plug" running within a conical shell. Endwise movement of the "plug" shaft is necessary to

compensate for wear and for operating adjustment. A special flexible gear coupling has been developed, known as the Jordan-type coupling. It has a special cover sleeve, fitted with a long spline. This spline mates with a special hub that can be moved to various positions along the shaft. The coupling will therefore compensate for any amount of axial movement required.

"Cut-out" couplings are special units designed to allow quick disengagement. An instance of this kind is dual and tandem drives. When desired to disengage the coupling, it is done simply by backing off special radial screws in the flange of the female cover sleeve, then shifting the cover axially to the disengaged position, and replacing the radial bolts.

Another design allowing the same advantage makes use of a shifting ring and lever. By fastening the lever in either one of two places, the cover may be held in either the engaged or disengaged position. This method eliminates the radial bolts formerly mentioned, and makes shifting easier.

There are some cases in which it is desired to protect machines, or prime movers, or both, against overload. This usually requires that a breaking or shear pin be incorporated at some point in the drive. The pins are made to shear at a predetermined load and are readily replaced. All metal-to-metal wearing parts are lubricated.

Couplings for Thrust

Another special flexible coupling of gear-type is a so-called marine coupling, particularly designed for connecting the propeller shaft to the engine or gear shaft. This coupling allows the thrust bearing in the engine or gear to take the thrust of the propeller in either direction. The connected shafts are tied together without lateral clearances. This eliminates any backlash when changing direction of thrust. It also compensates for angular misalignment, which is practically certain to develop in such installations.

It is entirely possible to make up a flexible coupling of gear-type which incorporates a brake wheel or a pulley, the brake wheel or pulley surface surrounding a portion of the coupling proper. An arrangement of this type is highly convenient in cases where space is at a premium, since it practically allows the coupling to function as a brake or a pulley, in addition to performing its regular coupling service.

There are many machines which are required to operate continuously. On some of these units, special gear-type flexible couplings known as oil-collector couplings are used. These couplings are equipped with special sleeves, which permit continuous or periodical lubrication while running. They should not, however, be exposed to dust, water or grit.

Another kind of gear-type coupling where lubrication is a matter of special importance is used on vertical connections. Were it not for special design on a vertical-type coupling, it is obvious that all lu-

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You can choose from three types of Armco Buildings—frameless, rigid frame, truss type—to meet various size and design requirements. They offer the advantages of all-steel construction, completely flexible arrangement, simplified design, storm-safe durability, and low-cost erection.

Buildings are quickly erected by a trained Armco crew. Structure sizes range from 4 to 100 feet clear span widths, in almost any length. Covering material may be galvanized steel or the new Armco ALUMINIZED STEEL.

Write us for complete details on Armco Buildings, mentioning the size you want. We will gladly make recommendations to meet your specific needs.

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Other Offices in Principal Cities

ARMCO STEEL BUILDINGS

This warehouse in Houston, Texas, is an Armco Steel Building. It is 90 ft. wide, 140 ft. long, with translucent skylights in the roof.

bricant would gravitate to the lower half of the device. Vertical gear-type couplings as provided by some manufacturers incoroprate a center plate, used for sealing the lubricant in the upper half of the coupling, as well as for supporting the sleeves in central position in relation to the two hubs. In a coupling of this kind, the upper and lower halves are separately lubricated.

There is also available a floating-shaft type of vertical gear coupling. It has a design differing somewhat from a standard horizontal floating-shaft coupling. In this case, the rigid hub of each unit is placed in the bottom position. Through use of spacer plates, lubricant is sealed in the upper or geared half of each coupling. Removing the floating shaft provides free access to either of the connected rotors.

The gear-type flexible coupling is a highly-important element in power transmission and should be considered as a means of increasing efficiency in connection with many different types of power transmission layouts.

ERNST

Boiler Accessories

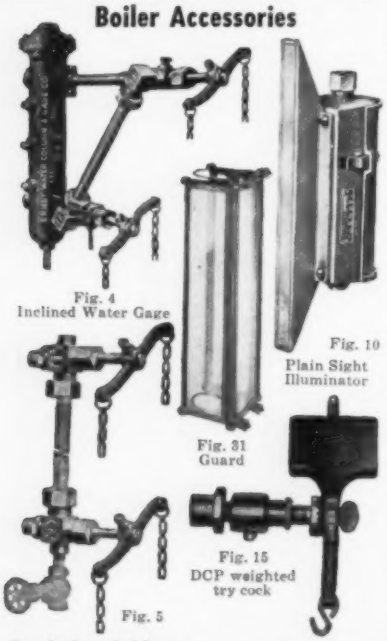

Fig. 4
Inclined Water Gage

Fig. 10
Plain Sight Illuminator

Fig. 31
Guard

Fig. 15
DCP weighted try cock

Fig. 5
Standard vertical bronze water gage, 350 pound

Send for Catalog

ERNST WATER COLUMN & GAGE CO.
Livingston, N. J.

Water Treatment

(*Continued from page* 49)

operating table.

Operation of all four filters is controlled from one table through the use of pneumatically operated Continental[5] butterfly valves. The sequence of filtering, influent off, backwashing and filter to sewer after backwashing is performed by the manual adjustment of air valves mounted on the operating table. Through the use of pneumatic control, it was possible to centralize at one table all necessary manual adjustments required of the water treatment plant operator.

After filtration, the water is stored in a clear well under the filters. As water is required by the plant boilers, it is pumped from the clear well through four Infilco sodium zeolite softeners. The flow through each is measured by a Brown electric flow meter body which electrically transmits the measurements to a circular chart recorder with electronic integration. Again each integrator is paralleled by a timer which sounds an alarm whenever the flow through a softener exceeds a set predetermined number of gallons. The alarms serve to notify the operator that a softener must be regenerated. It is only necessary then for the operator to start a second program timer assembly which properly sequences backwash, regeneration, fast rinsing, slow rinsing and "on stream" operations.

Prior to the installation of the water treatment facilities, raw water was simply filtered. With a minimum of treatment it was necessary to pull down a boiler on the average of 100 days and clean it out. The longest time between clean-outs was 150 days. Now the boilers are expected to run from 10 to 12 months between shutdowns before requiring cleaning and inspection. Thus, outage time on the boilers has been reduced approximately one-third.

The Shepard T. Powell Co. of Baltimore, Maryland, were the consulting water treatment engineers. They designed the over-all treatment system, with instruments specified by Westvaco.

Fire Protection

(*Continued from page* 46)

with control valves located a safe distance away from the turbine front end.

Hose Connections

Hose outlets which permit ready connection of 1½" hand fog lines are of vital importance in a plant where the rupture of an oil line or an oil spill extending beyond the reach of a fixed fog system might endanger otherwise unaffected portions of the plant.

Hose risers and twin-gated hose connections have been provided throughout the plant at strategic locations indoors as well as outdoors in such a manner that even under the most critical condition

What's the low-down on blow-down?

The whole story will probably surprise you. It is true, for example, that about 90% of all boiler blow-down today is still hit-or-miss. It's also true that equipment to do the job right can save enough wasted heat units to pay its own way in a matter of months. To get all the eye-opening facts send a card, letter or wire to *The Madden Corp., 1543 W. Morse Ave., Chicago 26, Ill.*, and ask for "Blow-Down Low-down."

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Cut maintenance costs and delays due to pump failures through these outstanding features:

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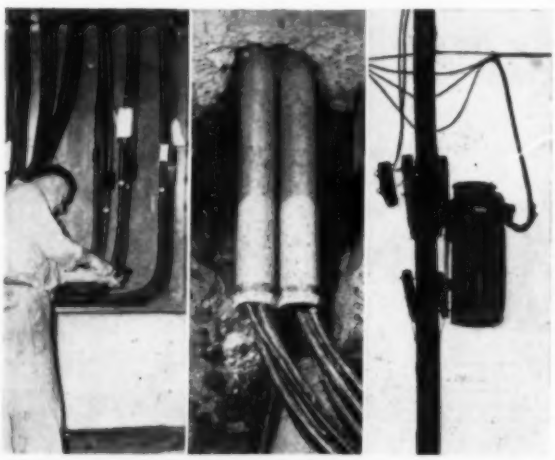

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which might render an entire section of the plant untenable, readily accessible hose connections will be available within a minimum distance.

Complying with insurance regulations, twin 2½" hose connections were also provided on the suction and discharge side of the fire pumps for possible use by the municipal fire department.

The station fire main is cross-connected to the station clear water supply by means of a double-check-valve installation. This puts the fire main under clear water pressure at all times thus preventing draining of the fire protection tank from unauthorized operation of outlet valves.

Due to the fact that the installation of the fire protection system had to be performed while the plant was in normal operation, certain portions of the work, particularly those involving the transformer fog systems, had to be done so as not to require prolonged shutdown. A close schedule was worked out by the operating department of Gulf Power Company and Associated Engineers, contracting engineers on the job, whereby load switching over weekends made individual transformers available in successive stages.

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Classified rates are net, payable in advance, each month. Rates are based on column inch, with three columns per page, 10 inches per column, column width 2⅛ inches — a total of 30 column inches per page.

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POWER ENGINEER

A unique career opportunity for a graduate mechanical engineer is now available in the Engineering Service Division of our Engineering Department. The applicant must have 8 to 10 years of practical power experience, including operation and maintenance of industrial steam power plant facilities and equipment testing. Some experience in steam plant design and construction or in thermal insulation of process piping and equipment is desirable.

The successful applicant will assist in specification of power equipment and in selection of new facilities, and will make economic evaluations and involved heat balances for complicated power systems.

Duties will include determination of causes of equipment malfunctioning and development of recommendations for corrections.

Please send complete resume, including details of education and experience, to:

Mr. J. C. Costello, Jr.
Engineering Department

E. I. du Pont de Nemours & Co., Inc.
Wilmington 98, Delaware

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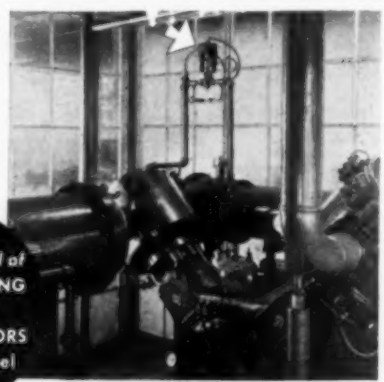

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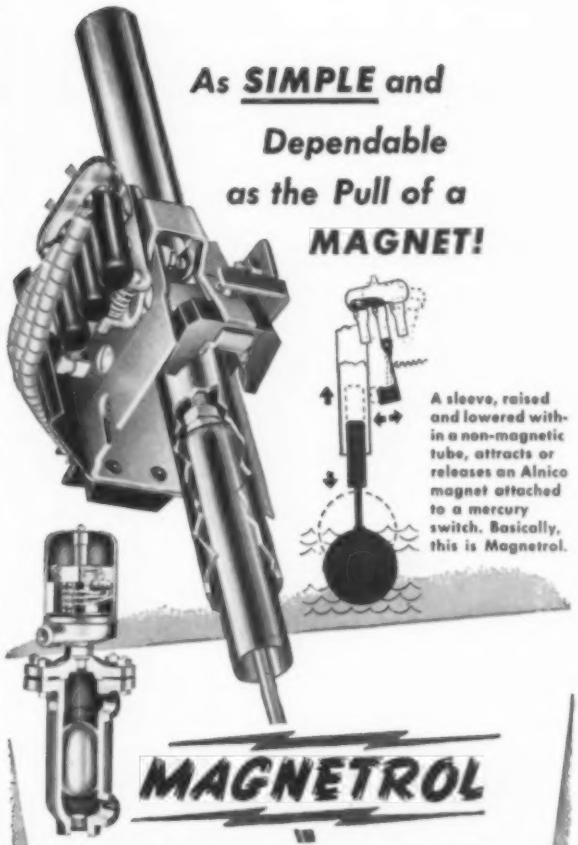

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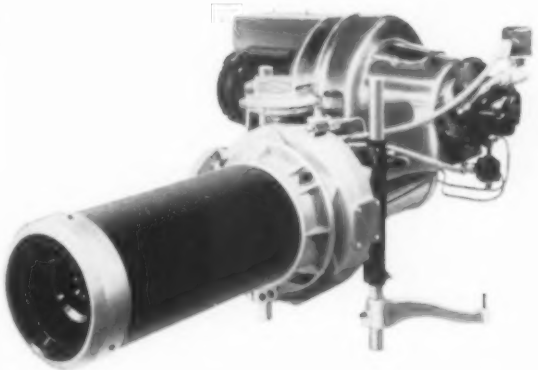

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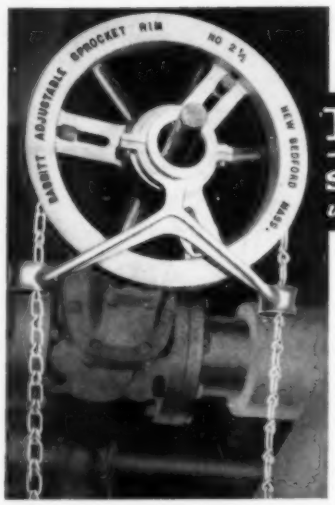

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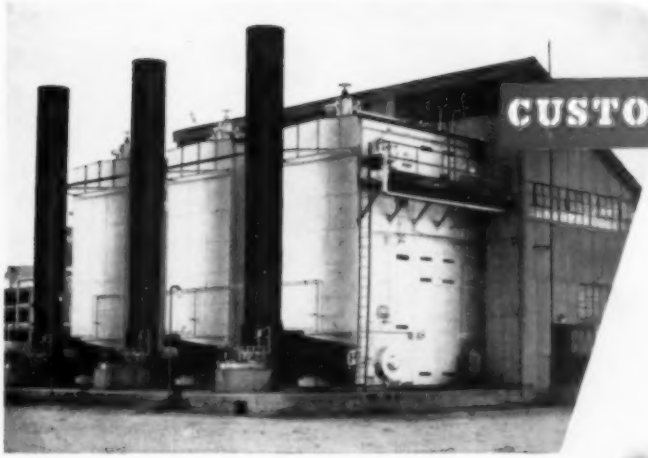

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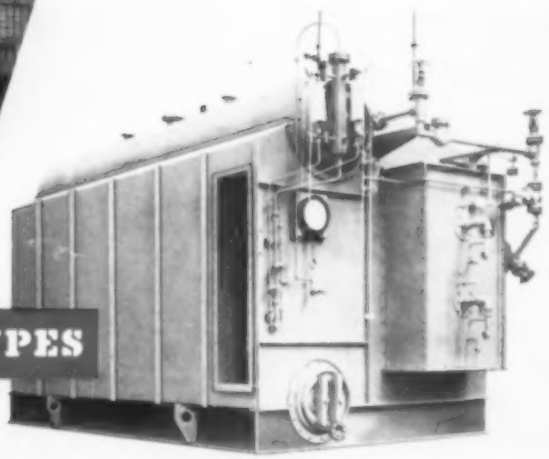

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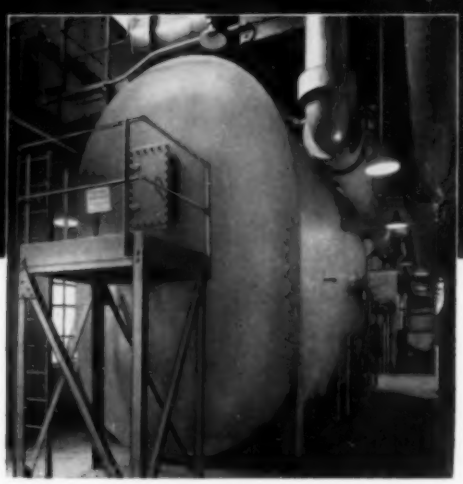

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